QUALITY STANDARDS FOR FROZEN FOODS—INCLUDING COLOR

FOOD INDUSTRIES

JULY 1939

HOMES OF FAMOUS FOODS... LOOSE-WILES "SUNSHINE" BISCUITS, LONG ISLAND CITY, N. Y.

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Food Trade's Own Laws Boomerang, p. 390

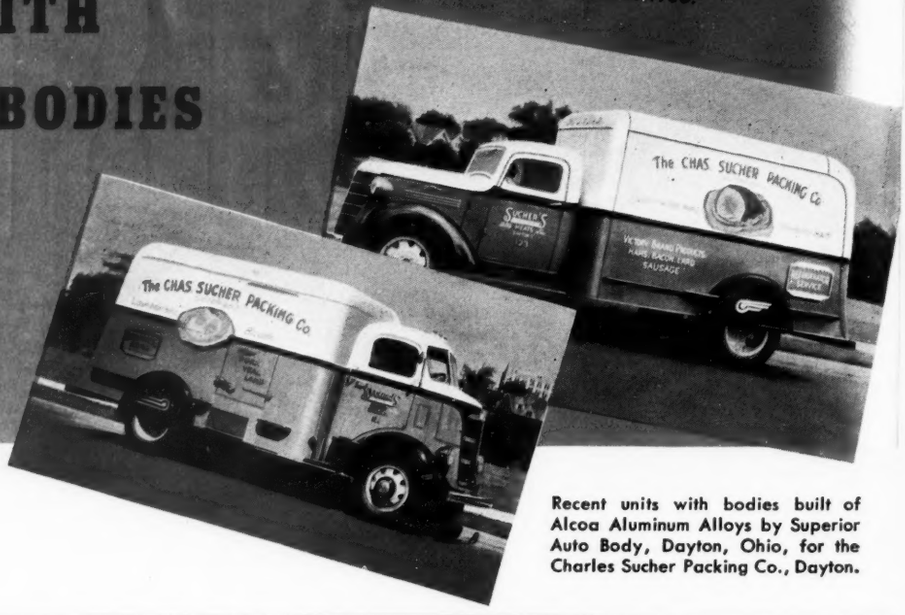
McGRAW-HILL PUBLISHING COMPANY, INC.

*Field Report on:

SIX YEARS OF SAVING WITH ALUMINUM BODIES

*This is another advertisement based on reports from our engineers in the field, detailing the experience of truck operators who are now using bodies or trailers constructed of Alcoa Aluminum. Facts are obtained directly from the operators.

Aluminum unit operated by Charles Sucher Packing Company since 1933.



Recent units with bodies built of Alcoa Aluminum Alloys by Superior Auto Body, Dayton, Ohio, for the Charles Sucher Packing Co., Dayton.

"Our records bear out that savings made in gasoline, tires, maintenance, etc., due to the saving on weight, and also to durability, on trucks with Aluminum bodies, are really worth considering," runs a letter from the Charles Sucher Packing Company. They know what they are talking about; they have 12 trucks fitted with Aluminum bodies, in capacities from 1½ to 12 tons. The oldest has been in service since 1933.

Note that the statement mentions *durability*. Aluminum construction is more than light. It stands up, year after year. Because it is naturally light, Aluminum can be used in thick sections; *thickness* brings the *stiffness* required to make a strong structure.

Maintenance is likewise mentioned. Aluminum resists corrosion, hence paint holds to it better, and maintenance cost is reduced. The metal is easily cleaned, providing a food transport body which is and looks sanitary.

Get these advantages in your truck operation. Leading builders are ready to construct truck bodies, trailers, tanks which save in weight and in operation cost, because they are built of Alcoa Aluminum Alloys. Ask them. ALUMINUM COMPANY OF AMERICA, 2152 Gulf Bldg., Pittsburgh, Pa.

ALCOA ALUMINUM

FOOD INDUSTRIES

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ARTHUR S. ALLEN, Consulting Color Editor

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★HOMES OF FAMOUS FOODS

"Bakery of a Thousand Windows," the Long Island City plant of Loose Wiles Biscuit Co., one of a number of factories where the famous "Sunshine" biscuits and crackers are made, is shown on the cover of *Food Industries* this month.

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In THIS *Issue*

• COLOR EDITOR

Another name appears on our masthead this month, that of Arthur S. Allen as Consulting Color Editor. He will have supervision of the color printing of all color plates in the FOOD INDUSTRIES reproduction of the Agricultural Marketing Service's standards of quality grades. Mr. Allen is well known to all who have been attending the Packaging Conferences of the American Management Association where he has been a frequent speaker.

ARTHUR S. ALLEN

Many years ago Mr. Allen was associated with the late A. H. Munsell who discovered the three dimensional properties of color. Today, Mr. Allen is one of the outstanding color engineers in the country. In the field of packaging he is also well known.

In his capacity as consulting color editor, it will be Mr. Allen's function to supervise the reproduction of the color standards so that they will be as accurate as it is humanly possible to make them.

• RESEARCH MUST COME FIRST

New food products do not pass from idea to package with no intervening steps. Often the research upon which a successful food product is based was carried out some years before the product's appearance. And nowadays, most new things are based on research, rather than on inspiration.

So it always pays the alert food manufacturer to keep aware of progress in research. And FOOD INDUSTRIES helps him to do so, by printing articles like "Concentrated Fruit and Vegetable Products—A New Apple Concentrate," by H. W. Gerritz and J. L. St. John, on page 369. The authors are connected with State College of Washington in Pullman, where their research was carried out.

• SHALL WE DISSOLVE THE UNION?

Of course, you'll say "No," as what good American wouldn't. Nevertheless, we are well on our way toward just that goal, as Ivan C. Miller points out in an article on page 390. The strength of our nation has been largely built upon free and unhampered trade between the states. Now, a hundred and one restrictions are being placed on that trade, always, of course, with the best of possible motives. Nevertheless, these restrictions are choking interstate trade and, if the trend continues, we will be a federation of 48 half-baked autarchies, rather than a union of 48 sovereign and prosperous states.

In FORTHCOMING *Issues*

• DEVICES THAT THINK

With hand work rapidly being replaced by machine operation in the food industries, the use of instruments and control systems to take the place of hand control in process operation becomes even more important. FOOD INDUSTRIES has already published engineering studies of temperature and pressure control.

To round out the series, a study of flow and liquid level control will appear in a forthcoming number. This will be liberally illustrated with blueprints showing typical food industry applications of devices available for the purpose, and will tell how these applications work.

• LIGHTING FOR QUALITY

Quality control, as an essential factor in the operation of a successful food manufacturing enterprise, has received merited recognition. But one feature of quality control that has not received the attention it deserves is lighting. To overcome that lack, FOOD INDUSTRIES has in preparation a brief article on the subject that will prove illuminating to many readers. Light reading for summer, you might say.

• IT'S THE HUMIDITY

Mid-summer is a time when we all have humidity very much on our minds, so FOOD INDUSTRIES has in preparation for its readers an article that deals with high humidities. The high humidities discussed are those so desirable in the cold storage of many types of foods, where prevention of dehydration and shrinkage is needed. Perishable foods should be stored in an atmosphere in which the humidity is maintained near the "optimum" point. The article will tell how this is done.

How Many Do You Need?

With this number of FOOD INDUSTRIES *is published the first of standards for quality grades of foods, that are being issued by the U.S. Agricultural Marketing Service. As announced last month, we plan to publish additional standards, as fast as they become available from the United States Department of Agriculture. And each of these standards will feature the correct color standard, as set up by the department.*

As these standards accumulate, from month to month, the editors of FOOD INDUSTRIES *would like very much to know how readers are using them. So please write us, telling the use YOU make of these standards. And, as our supply is limited, be sure to let us know promptly how many extra copies you will need. The price to* FOOD INDUSTRIES *subscribers is 50 cents each—to non-subscribers the price is 75 cents each.*

FOOD INDUSTRIES
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LAURENCE V. BURTON, Editor
Volume 11, Number 7 July 1939

The Talk of the Industry

» INNOVATION. Look at the page immediately following the contents page for information about authors, articles. Also forthcoming features that you may not want to miss.

» A FRIEND who ordered a chocolate malted milk at Borden's World's Fair Exhibit asked for the powdered nutmeg.

"Who ever heard of such a thing!" was all the satisfaction he could get from the sweet young thing who dispenses the drinks.

» FROM OUR 24th floor editorial offices one can look down on the elevated express highway which skirts the Hudson River about a half mile away. This vantage point permitted us to see the motor procession which bore the King and Queen through New York on June 10. Before it was possible to focus field

glasses on the car which carried the visiting royalty, all were out of sight. And so—to work.

» RECALLING Dr. Carl L. Alsberg, whom old timers will remember as one time Chief of the Food and Drug Administration, the thought occurs that he must be chuckling at his good fortune to be spared all the headaches of putting the new Food, Drug, and Cosmetic Act into operation. Does he get a break!

» AT THE WHITE HOUSE a group of business paper editors were recently treated to a presidential monologue over this and that. Inasmuch as the conference was all "off the record" it is impossible to publish details. The only publishable fact is that when an editor reached into his pocket for his spectacle case, two beady-eyed Secret Service men were right on the job.

» ONE'S THOUGHTS on unwrapping a loaf of sugar are anything but pious. The field is still wide open for the man who can produce a sugar wrapper that will come off easily in one piece without the aid of a dissecting instrument or long, sharp fingernails. It must come off in less than 30 seconds of diligent effort to win our acclaim. Being old fashioned, we prefer the sugar bowl to these tight wrapped end-pieces that remain after the body tears off.

» ALL FOOD MANUFACTURERS would do well to subscribe to the *Federal Register*, published by the National Archives of the United States, Washington, D. C., for the next year or two. This is a daily publication put out by the government as a place to publish all official orders, proclamations and the like. As soon as anything, such as notices of hearings, is published there, it becomes effective.

» POLITICAL STRAW. By a strange turn of fate we were dining unaccustomedly in a swank sidewalk cafe among many well dressed people. Only a two-foot potted hedge separated us from the passersby. One of them, a typical, sniveling, old time stewbum paused. Wiped his nose on the back of his hand, like a snowbird. Eyed us disapprovingly.

Leaned over the hedge. Pointed a dirty finger almost into our food, and jeered,

"Betcha Roosevelt gets re-elected!"

After which a uniformed attendant gave him the old-fashioned bum's rush.

» REMEMBER the "purge"? Well, its effects are marching on. If it had not been for that one purge which the New Deal won—the successful effort to retire John J. O'Connor, of New York, to private life—there might not be the slightest chance of amending the Wages and Hours Law in the direction for which business men are clamoring.

You may remember that after all the purges were over—when all nine Democratic senators who had opposed the President on the Supreme Court packing and who were up for reelec-

tion had won their renominations—(though one was afterward beaten in the election by a Republican)—that the New Dealers said the defeat of O'Connor outweighed all the rest. Why? Because O'Connor was chairman of the House Rules Committee, which comes pretty close to dictating what the House shall take up and what it shall not.

The New Dealers knew that the next ranking Democrat, Adolph Sabath, of Illinois, would become chairman if O'Connor was beaten. They were right about that. Sabath did become chairman. But since then something no one expected has happened. Leadership of the committee passed out of Sabath's hands. There was a bloodless revolution, and at the end of it Sabath was a figurehead. The real power in the House Rules Committee for the last few months has been Gene Cox, of Georgia, and the funny part of that is that Cox has been against the New Deal about ten times to every one that O'Connor has. Cox agrees economically with Senators George Tydings, Glass and Byrd.

It was Cox who forced that investigation of WPA which has been so distressing to the New Dealers. You know the one, with revelations about costs, paying ladies to pose nude in order to determine if unemployed youths who claim to be artists can really paint, etc. Now it is Cox who blocked Representative Mary Norton's plan to extend the Wage-Hour Act to agricultural and first process workers, and who may force the liberalization that business wants.

How Much Do We Eat?

A CAREFUL REVISION of the statistics of consumption of the principal foods in the United States shows that per capita food consumption is something over 1,450 lb. Detailed figures were given on page 188, April FOOD INDUSTRIES.

Our previous (1932) estimate of about 1 ton per person per year has been found to contain an error in the consumption of dairy products.

Beverage figures, if included, would increase the 1,450 lb. figure to about 1,460-1,465 lb.

The Future of Egg Products

AMERICAN EGG PRODUCERS have been gaining profits as a result of the Japanese invasion of China. Imports of Chinese dried eggs have dropped materially from the equivalent of about 850,000 cases of eggs to 250,000 cases in 1938. According to *Pacific Rural Press,* American processors dried 500,000 cases of eggs in 1938 and plan to double this production in 1939. Also, they state, the American egg producer will be in serious trouble as soon as Japan takes over China's egg industry and rehabilitates it.

To offset this possibility, Congressman C. F. Lea, of California, has introduced a bill, H. R. 4000, to impose an excise tax on eggs and egg meats. If you use dried or frozen eggs, this may have a bearing on the future prices you will have to pay.

Don't Say You Were Not Notified

FAR BE IT FROM US to say we told you so, yet our memory is still fresh of those who wrote, telephoned or called in person last year to see where or how they could obtain a copy of the FOOD INDUSTRIES Catalogs and Directory.

In case you missed it altogether, you should be advised that Section 3 of the 1938-39 C & D had a tabulation of the principal state food laws and regulations. That alone would make the volume well worth owning.

Active revision of this digest of state laws and regulations is now under way. It will be considerably enlarged, and will be up to date as of mid-summer. Also there is much more valuable information.

How do you get it? To bona fide food manufacturers, it's free. Last year we gave it free to 12,800 food manufacturing plants. To others, the cost is—well, watch for the ads in this publication.

Hors d'Oeuvres

• *Poultry producers have a new slogan, "Eat Eggs Each Day and Keep Anemia Away." Why not eat onions each day and keep everybody away?*

• To dispose of surplus wheat it has been proposed that 5 per cent of roasted wheat be mixed with coffee. To get rid of the grapefruit surplus it has been suggested that grapefruit juice be used in bread. Proposals like this make one wonder what ought to be done with the surplus nut crop.

• *Coffee has become a scarcity in Germany. Maybe Hitler is emulating Kuprili, dictator of Constantinople in the 16th century. Kuprili, realizing that drinking coffee stimulated thinking, made the people abstain from it under penalty of beating and, on second offense, death.*

• Almost a million more sheep and lambs were killed in metropolitan New York last year than in the great packing center at Chicago. Could it be that more sheep's clothing is needed in New York?

• *A labor agreement between Alaska Packers Association and a C.I.O. workers' union provided that each cannery have a phonograph and at least 48 records for the use of employees. What! No waxed floors?*

• The price of a wife in French Cameroon, West Africa, is 12 baskets of salt, with one returned for cooking at the wedding. The baskets are only about 2½ ft. long and 3 in. in diameter. So either salt is dear or wives are cheap in French Cameroon.

• *Just as a small boy left the Beech-Nut toy circus at the World's Fair he saw one of the little canopy-covered tractor-drawn buses. "Look!" he cried. "The Beech-Nut subway."*

• United Air Lines will serve more than half a million meals in the air this year. With aviation still in its infancy, it represents a baby market for quality food which will grow to the dimensions of a big man some day.

—F.K.L.

Keep Your Washers in Order

A VEILED REFERENCE to the need for proper machine maintenance of mechanical washers for re-use glass containers was made last December. The reason given was that a wobbling brush may rub the interior of the container and start a container failure.

How such apparent trivialities work out is illustrated by the breaking of two full quart bottles of milk in different neighboring homes. In both cases and at almost the same hour a woman reached into her mechanical refrigerator, grasped a bottle, lifted it out without striking anything. Before she could place it on a table, the bottle literally fell apart, spilling an entire quart of milk.

Presumably the heat of her hand at the danger spot—the rubbed place—expanded the glass sufficiently to start the rupture. Unless you have seen it demonstrated, it is difficult to believe how easily glass will break or can be

broken after interior rubbing by metallic objects.

Nothing short of perfect machine maintenance is permissible, for very obvious, though unstated reasons.

Back in 1785

OUR NATIONAL REVERSION to various interstate barriers against trade, such as once nearly wrecked the infant Republic in the 1780's, has prompted the publication of a series of articles on the subject which begins in this issue. It so happens that the dear old battle between butter and margarine characterizes the opening blast.

For the benefit of those whose prejudices are very highly developed, let it be said that FOOD INDUSTRIES maintains a studied attitude of strict neutrality in this controversial matter. But we are decidedly partisan toward intellectual honesty, and restoration of business to better volume. And we are firmly convinced that a provincial attitude that restricts interstate commerce, regardless of the allegedly pious pretexts on which such an attitude is founded, is a sure way to keep business in the doldrums.

The New Quality Grades

AS A RESULT of many requests for duplicates of the color standards from Maerz and Paul: "Dictionary of Color" (a McGraw-Hill book), FOOD INDUSTRIES is publishing in this issue a copy of the new tentative standard for frozen peas as promulgated by Agricultural Marketing Service. The latter is the new bureau to replace the old Bureau of Agricultural Economics and certain other services of the U. S. Department of Agriculture.

A feature of the new standard of quality is the use of a color standard for the first time in this form of grading. If it were not for the fact that other standards of similar character are contemplated covering beets, tomatoes, meats, juices, sirups, dried fruits, etc., it is doubtful if we should attempt the difficult job of matching colors and providing for our readers a single easily accessible source of color comparison.

Naturally, if you are in the frozen pea business, you will be much interested in the new feature of this issue. Also, naturally, if you are in some other business, you won't be particularly interested in frozen pea standards.

But *your* turn may come. Several other commodities are nearly ready for announcement of tentative or final standards of quality.

Whether we shall continue to reproduce the color standards as they are announced in the future depends on the reaction and desires of readers. The cost of printing those little blocks of colors on page 383 is very great. It requires special inks, special paper, special printing, special checking, and extra special supervision.

If you want extra reprints of the entire four-page form, they can be had for 50 cents each to subscribers. Non-subscribers must pay 75 cents each. The supply is limited, and subscribers come first.

Cooperative Research on CO_2 Storage

TOO LATE for publication last month, the American Institute of Refrigeration officially announced its sponsorship of a cooperative research program to determine quantitatively the value of storing perishables in refrigerated CO_2 atmospheres.

Much has been written and more has been said pro and con the use of CO_2 in shipholds and storage rooms to preserve the goodness of fresh meats, eggs, butter, and similar perishables which are susceptible to mold growths, development of "off-flavors," and bacterial decomposition.

In the absence of automatic control devices to regulate the concentration of the CO_2 gas present, the information previously obtained has been far more qualitative than quantitative. Consequently, the conclusions drawn have frequently been conflicting and confusing. Within the past few months, the situation has been changed.

Development of a CO_2 converter by a large steel fabricator has made possible the use of solid CO_2 on a basis of economy and control unattainable heretofore. Still more recent has been the development by a manufacturer of regulator devices of an automatic control valve mechanism by which the flow of CO_2 gas into a confined space may be regulated to maintain a constant predetermined concentration at a given temperature. These mechanical developments have encouraged taking up the study of CO_2 storage on an exhaustive quantitative basis.

How to keep the studies on a truly scientific basis, how to finance such a series of studies, and how to disseminate the data obtained have been the questions facing the supporters of the proposed research program.

Pending sponsorship of the program by the American Institute of Refrigeration, spade work has been going on for nearly a year to determine the interest of food manufacturers as a group in the results of such studies, to get a measure of this interest in terms of financial support, and to line up facilities and personnel to do the work on a scientific, fact-finding basis.

It is to the credit of the food manufacturers, the makers of the equipment essential to the studies and to the management of several institutions of higher education that this cooperative research program has progressed sufficiently to warrant the sponsorship of the American Institute of Refrigeration. Its possibilities for the good of food handling and processing are almost unmeasurable. The broadness of its scope is limited at the present only by the funds which have been made available by the individual food manufacturers subscribing to the program. They are to be rewarded by being the preference recipients of the data resulting from the studies made.

We commend the program to our friends in search of quantitative information on the virtues of CO_2 preservation of perishables.

How to Compare Colors

WITH THE ANNOUNCEMENT of the new color standards in quality grades by Agricultural Marketing Service (the old B.A.E.) of U.S.D.A., there arise new problems in the practical use of color, and how to know when colors actually match. Several firms are already planning to use these colors in their quality control departments.

Color itself is an exceedingly complex subject, for color possesses three dimensions: hue, or color name; chroma, or intensity of the color; and value, or lightness and darkness. It is easy to be right on hue and wrong on the other two dimensions, or right on hue and value and wrong on chroma, etc.

What can be done about it? First of all, don't employ a color-blind person for this work. There are many very able citizens who have defective color vision. They may fail to see red, or green, or both; or they may distinguish them only very poorly. Obviously such a person is not to be entrusted to supervise color work.

Color-blind persons may be detected by the charts in Professor Ishihara's book on that subject. This is men-

tioned in our book reviews this month although the book was in its seventh edition in 1936.

Proper matching of colors or color comparisons must be made with exceeding care. It should be done by north daylight, never by ordinary artificial light, nor in glaring sunlight. In comparing colors your eye should be in a line that is perpendicular to the colored surface. Never make a color comparison from any angle but perpendicular. For example, if you compare the colors reproduced in this issue with the standard color plates in Maerz and Paul: "Dictionary of Color," and view them from any angle but the perpendicular position, you will probably find that they do not match. Even a few degrees from vertical will apparently throw the color off.

It is because of this difficulty of obtaining perfect color matches that FOOD INDUSTRIES has obtained the services of Arthur S. Allen as consulting color editor. It is his job to see that the reproduction of the color standards we publish are accurately matched with Maerz and Paul colors.

If readers experience any serious problems in the use of the color standards, the editors should be notified together with a full explanation.

Higher Pressures to Improve Quality of Macaroni

ENORMOUS PRESSURES used in pressing alimentary pastes (macaroni, spaghetti, and related products) are of the order of 2,500 lb. per sq.in. This is comparable to the pressures used in homogenizing liquids, chiefly for the purpose of disseminating fat particles in so fine a dispersion that they cannot again clump together.

In pressing the doughs used in macaroni manufacture, however, the ends to be attained are quite different. One of these is to form the product into its customary commercial shapes. The other is to compact the material into a translucent mass. Without these high pressures, the golden-hued translucency is lacking though the proper shape may be had.

In view of researches published about two years ago by Fifield, Smith and Hayes (*Cereal Chemistry*, 14, 661, 1937), one wonders why higher pressures are not employed. They showed that with pressures as high as 8,000 lb. per sq. in. the translucency increased, which is in the general direction of improved quality. In particular is this suggestive because of the premium prices paid by macaroni manufacturers for golden colored semolina from durum wheat (the granular material from which the dough is made). If higher pressures tend to accentuate the translucency, they will probably also tend to accentuate the very desirable premium color.

Admittedly, there are also negatively correlated factors, for highly pressed doughs dry more slowly, and the product has slightly different cooking properties with a tendency to darken more easily on heating. This matter undoubtedly deserves more study. Perhaps the temperature increase *during pressing* with 8,000 lb. pressure is responsible for chemical changes, and possibly there is need for temperature control of the doughs by mixing with ice water instead of tap water.

Here is a field for investigation by the food technologist which has possibilities for considerable success. And it offers a possible reward in the shape of a defense against price-cutters who don't use durum wheat, and who are the bane of the reputable manufacturer. For if quality is more a matter of appearance than of intrinsic properties, there should be a possible saving in raw material costs by appropriately higher pressures in the forming presses.

Label Provisions Postponed

THE LEA BILL to postpone the effective date of the labeling provisions of the new Food, Drug, and Cosmetic Law from June 25, 1939, to Jan. 1, 1940, has been approved by the President after a brief stormy career. Biggest factor in the legislative battle was a Senate amendment to permit a still further postponement until July 1, 1940 providing a type of procedure with which the House disagreed. After many days the Conference Committee report persuaded the House to recede from its disagreement.

As the law now stands the effective date for the new labels for foods is postponed until Jan. 1, 1940. But manufacturers whose labels are lithographed and were actually manufactured prior to Feb. 1, 1939, or those manufacturers whose containers were manufactured prior to Feb. 1, 1939, and were furthermore directly labeled by lithographing, etching, stamping, pressing, printing, fusing, or blowing on or in such containers, will be able to secure a further postponement until July 1, 1940.

To get this second postponement, the manufacturer must comply with regulations yet to be written by the Secretary of Agriculture, and the manufacturer must show that these labels or these containers labeled in the specified manners were actually made prior to Feb. 1, 1939; also that compliance with the Jan. 1 date would cause the loss of valuable stocks of such labeling or containers and furthermore that the second, or July 1, postponement will "not prevent the public interest being adequately served."

This respite from the need for immediate compliance will be accepted gratefully by many a perplexed food manufacturer, but no one should let up his preparations for proper labeling, for another half year will roll by with amazing speed. Inevitably some will be caught still unprepared on Jan. 1, 1940, and there is progressively less likelihood of the use of administrative discretion in enforcing the law as postponements are invoked.

What the Lea Bill as enacted actually means to food manufacturers after Jan. 1, 1940, is that if you have on hand a stock of old lithographed labels that were manufactured prior to Feb. 1, 1939, you have got to be able to show that they are not obsolete in the sense of being discontinued lines, that they comply with the *old* food law, and that you are going to be out a considerable sum of money if they become obsolete because of the new law, and that this financial loss means a real hardship to you, and only then can you get another six months in which to use them. If, perchance, someone in your outfit bought the labels after Feb. 1, 1939, you are out of luck. Or, if you have on hand a lot of lithographed cans or glass containers with fused-on labels or pressed or blown-in labels, you have the same chance to get another six months' extension, provided that they were produced prior to February 1 this year.

It is possible to deduce this much from the law itself. Yet there are still the regulations to comply with and these are yet to be written to cover any postponements from Jan. 1 to July 1, 1940. In case you are thinking about the future need for the second postponement, there is a curious little clause to be considered: "where such postponement would not prevent the public interest being adequately served." In that clause the Secretary of Agriculture has an unusual amount of discretionary power. Don't hope for too much from it if you have been having differences with the Food and Drug Administration.

We do not comment on other provisions of the law which pertain to Drugs and Cosmetics.

Concentrated Fruit and Vegetable Products*. . .

A New Apple Concentrate

By
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A NEW method of preparing concentrated products from fresh fruits and vegetables has been developed. These products can be reconstituted into prepared foods with a flavor identical with those prepared directly from the fresh raw materials. The new method avoids the difficulty of loss of flavor and character so typical of older methods. It produces a food material that can be reconstituted in fifteen minutes or less, rather than requiring the tedious method of soaking formerly employed. In fact, apple concentrate more recently prepared has been reconstituted in two minutes in hot water. In general, the new process as applied to apples is the result of the utilization and proper selection, sequence, combination, and careful control within modified limits of well-known processes such as bleaching, heat treating, and evaporating after the usual preparation of the fruit or vegetable by peeling, coring, and washing.

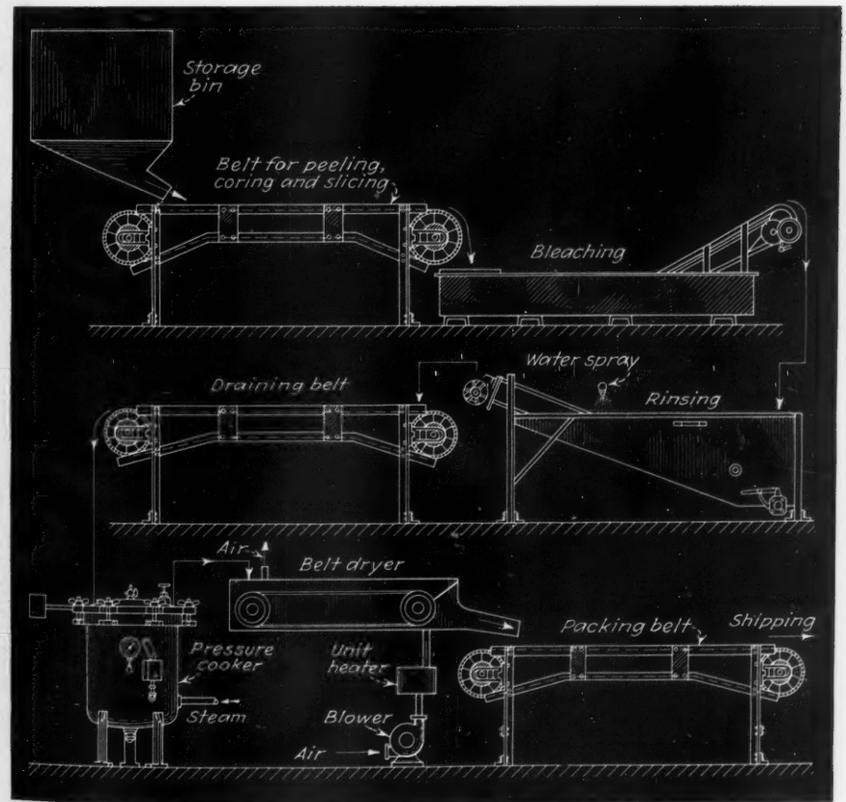
Bleaching must be carried out under carefully controlled conditions to avoid discoloration on the one hand or softening on the other. The bleached slices or quarters are cooked, after which the material is dried in thin films. Difficulties encountered in preparing a concentrate which would reconstitute to form a food essentially identical to the fresh product were eliminated through certain modifications of the ordinary cooking and bleaching processes and by carefully controlled drying. The resultant product can be packaged and kept for long periods of time without decomposition.

While preservation of foods by various evaporation methods is a common practice, products thus prepared usually differ markedly from the original. And foods prepared from these evaporated products are often quite different from the same foods when they are prepared directly from the fresh fruit or vegetable. This is especially true of fruits such as apples, since they have a delicate flavor and a color which is difficult to retain during the concentrating operation.

In this new method of preparing a concentrated fruit or vegetable product are given the basic principles on which a commercial procedure may be developed. The resulting product is one that may be quickly reconstituted by addition of water.

This new type of product merits investigation by

Pie Bakers
Canners
Confectioners



Flow sheet showing sequence of equipment used in making apple concentrate as visualized by* FOOD INDUSTRIES *from process described by authors.

* Abstracted from one section of a thesis submitted by H. W. Gerritz in June, 1934, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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A variety of apple products have been on the market at different times, but those prepared without bleaching, though they may retain the apple flavor, become dark and unattractive while those which are bleached have lost much of the original flavor. An ideal concentrated product would be one which retained the original fresh fruit flavor and also the attractive original color.

THE object of the work here reported has been to develop a product which can be reconstituted into foods which have a flavor identical with those prepared directly from fresh fruits or vegetables. This product should have an attractive appearance and should be in a form that can be adapted to a variety of uses for which the fresh fruits and vegetables are now used. Such a product would be of much value as a means of profitably utilizing apples and other fruits and vegetables which are otherwise not utilized for food. The need for methods of utilizing fruit through the development of additional by-products has recently been much emphasized. Such a process must be rapid, reproducible under a variety of conditions, and comparatively easy to control. The work reported was carried out principally with apples, but has also been applied to other fruits and vegetables such as pears, peaches, and sweet corn and peas with marked success.

The darkening of dehydrated fruits of vegetables probably results chiefly from two causes: first, darkening may occur due to caramelization of the sugars through overheating during cooking and evaporating; and, second, there may be darkening caused by a natural browning complex in the plant tissue as described by Onslow and others. Caramelization may, of course, be prevented by controlled heating, but the natural browning, which appears to be most important, must be prevented by destroying the natural complex.

Onslow (1919) reported that natural browning was caused by a peroxidase and an aromatic compound of the catechol type present in fruits. She believed that, after injury of the cell, the peroxidase activated the oxidation of the aromatic compound. Onslow (1920) published further results which led her to believe that three factors take part in the spontaneous darkening of plant materials: a catechol type of compound which may give rise to a peroxide; an oxygenase which helps to form the peroxide; and a peroxidase which decomposes the peroxide forming "active" oxygen.

Two methods most frequently employed for destroying the coloring complex and thus preventing or retarding darkening, are blanching and sulphiting. Other methods, however, have been studied. It has been the experience of the authors that an apple concentrate prepared from apples, treated by any process other than sulphiting, showed objectionable features. However, since the work here reported has been completed, Denny (1937) has patented a process for the use of thiocarbamide which may be applicable to our method. A concentrate prepared even from apples which had been treated with a sulphite solution, however, remained light in color for months. And if kept in a dark place or at low temperatures, this concentrate has remained light in color for several years. But, in order to retain the natural flavor, it was found necessary to add very small amounts of sodium sulphite.

Apples bleached in a 5-per cent solution of sodium sulphite for fifteen minutes before cooking gave a product of excellent appearance but the taste was affected. Very dilute solutions of sodium sulphite, sodium bisulphite, and sulphur dioxide were not efficient in retarding darkening; for instance, 0.5 and 1 per cent sodium sulphite solutions in which apples remained for fifteen minutes darkened as rapidly as untreated fruit. The concentrate from apples bleached in 1.5-per cent sulphite solution darkened after standing for several weeks or months. Analysis of these samples showed them to contain not over nine or ten parts of sulphur dioxide per million. Solutions of sulphites somewhat more concentrated than 1.5 per cent were reasonably effective in bleaching if the apples were dipped for ½ hour. This fruit was always washed before cooking to eliminate the sulphite taste in the final product. At 30-minute treatment, however, produced fruit that was too soft and too mushy because of absorbed water.

FRUIT allowed to remain in 3-per cent sodium sulphite or bisulphite solution for ten or fifteen minutes was effectively bleached and the amount of sulphite in the finished concentrate was equivalent to not over 30 mg. of sulphur dioxide per kilogram of concentrate. Sodium bisulphite at the same concentration gave excellent results, was convenient to use, and the final concentrate so obtained was of excellent quality. Its use may be preferable to sodium sulphite because it is less alkaline and thus has less effect on the tartness of the final product.

Since the greatest enzymatic activity and the largest amount of the darkening occurs in the portion of the apple next to the core, the bleaching agent must be made to penetrate these tissues to produce a satisfactory concentrate. To accomplish the maximum penetration, sulphur dioxide gas was used. Air was removed from the tissues by exhausting the container holding the fruit. The SO_2 gas was then admitted to the evacuated container and further forced in under pressure. An excess remained in the fruit after processing so that the product was not suitable for consumption. Admitting the sulphur dioxide under lower pressures, even to 10 mm. of mercury, gave a finished product containing excess sulphite and the flavor was affected.

The effect of cutting the apples into various sized pieces before treating with a sulphite solution was studied and it was found that quartered apples were the most satisfactory since slicing might allow the penetration of too much sulphite, while with halves the sulphite did not penetrate sufficiently.

The object of the procedure adopted should be to drive the oxygen out of the apple and the container before the action of the bleaching agent is destroyed and before the oxidizing complex becomes active, thus preventing darkening. The open kettle cooking operation may be used to prepare a light colored concentrate if the bleaching and other steps in the procedure are properly controlled, but it may not be best adapted to practical commercial use because of the expense of removing water necessarily added for cooking. Pressure cooking reduces the cooking time required, produces a light colored, fluffy product when properly dried. It also eliminates the necessity of adding water before cooking. The procedure is easily controllable and reproducible. Pressure cooking was carefully investigated, showing that pressures of 10 lb. and above result in a final product which is somewhat too dark after drying. Pressures of 5 to 7

(*Turn to page 416*)

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One Thousand Vats on Wheels

Power trucks eliminate one handling of product, speed movement of material, cut costs and make hard work easy in meat packing plant

▶Better methods of handling materials offer all plants an opportunity to reduce expenses. This article shows what the meat packer has done with power-operated lift and elevating trucks. The method is adaptable by
All Food Manufacturers

Fig. 1—Platform lift truck taking vat loaded with green meat to scale for weighing, after which it will carry load to curing room. The vat sets on a skid so that platform of truck can get under it. In background are empty vats standing in front of grading table for filling.

IT is not far from the room in which raw meat is graded to the room in which it is cured in the average meat packing plant, nor are the pieces of meat to be carried from one room to the other very heavy. But power trucks have greatly improved the speed, ease and efficiency of getting meat from the grading tables to the vats in the curing room. One handling of the meat has been eliminated, the time required to get meat into pickle has been cut about in half, the cost of packing the pickling vats has been reduced about one-third and nearly half the men employed in this operation have been freed for more productive work in the plant.

Fig. 2—Platform lift truck has delivered filled vat to curing room, where it is being picked up by elevating truck which will put it in position on the floor or on top of other vats. Runners on bottom of vat permit lifting fork to get under it.

The trucks have, in effect, made the curing room portable, bringing it to the meat grading room to receive the meat to be pickled. The room, of course, is not picked up and moved about, but a thousand or more vats or tierces, in which the meat is pickled, are.

For a great many years it has been standard packing-house practice to put the green pieces of meat into manually propelled tank trucks at the grading tables. These trucks are then pushed into the curing room, where workmen transfer the meat piece by piece into the curing vats. Ordinarily, it takes two men to pack a vat, especially when it is tiered on top of others, which is common practice in meat plants.

So workmen handle every piece of meat twice in getting it from the grading table to the curing room under the old system, but a progressive packer saw a chance to do away with one of these handlings and speed the movement of the meat from process to process, thereby realizing several ad-

vantages. And this was accomplished by using power trucks to bring the vats to the grading room that they might receive the meat direct from the grading table. The same trucks, of course, transport the filled vats back to the curing room, thereby eliminating the use of the hand-propelled trucks which had previously been operated between the grading and curing processes.

The curing vats weigh 350 lb. when empty, and they carry about 1,500 lb. of meat. Yet the power trucks scurry from room to room with this load like a boy on roller skates. Driving his truck into the green-meat grading room, the operator picks up an empty vat, sets it on the scales and backs away momentarily while its exact weight is determined and recorded. Then he rolls his truck forward, picks up the vat again, whirls the truck around and sets the vat on the floor in front of the grading table. The graders toss meat directly into the vat until it has been filled, when a truck

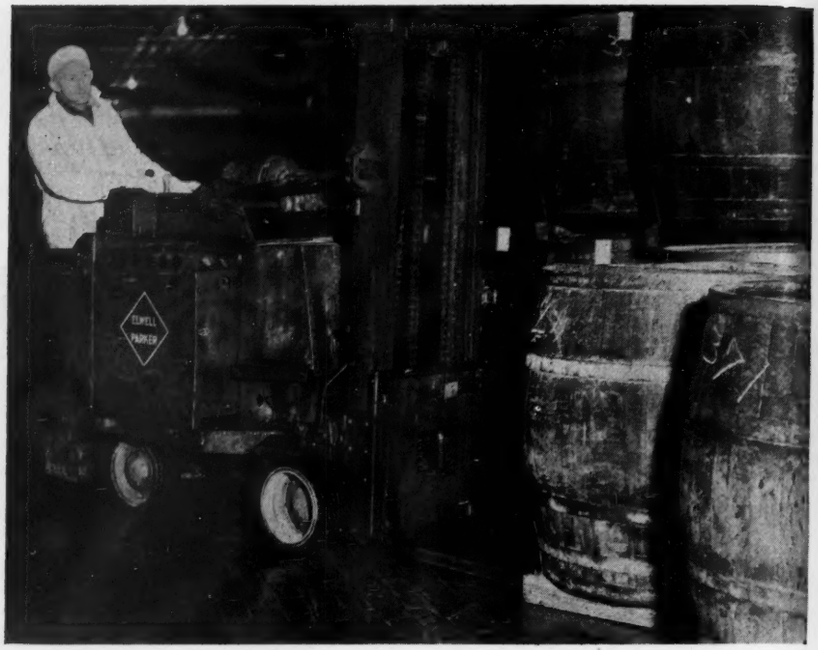


Fig. 3—Elevating fork truck placing vat on floor of curing room. It also tiers vats, as seen in Fig. 4.

Fig. 7—Platform lift truck with 2,000-lb. load of boxes, about to enter refrigerator car.

operator again appears on the scene. This time he picks up the filled vat (Fig. 1) swings the truck about and puts the vat on the scales so that its full weight may be determined and the empty weight subtracted to give the amount of green meat. This figure is important in computing shrinkage during the cure, too much of which whittles off the packer's profits unless the price is adjusted accordingly.

Taking the weighed vat off the scales, the truckman hauls it from the grading to the curing room. There he may set it on the floor and leave it for the operator of an elevating power truck to pick up and put into the proper position. Or he may be met by this second truckman who will take the load directly off his truck, as shown in Fig. 2.

To conserve space in the curing room, it is the practice to set one row of vats on the floor (Fig. 3) and place a second row on top of them. And here's where the elevating truck does yeoman duty. It raises a vat with its heavy load of meat above the tops of the vats on the floor, moves it into position over them and lowers it gently until it rests on their tops (Fig. 4). The reverse procedure, of course, takes the vats from their high perch and sets them on the floor, the elevating truck in this case handling an additional load of 725 lb. of brine. The

Fig. 8—Platform lift truck carrying load into car where it will be unloaded by hand to floor of car.

Fig. 6—Platform lift truck picking up 2,000-lb. load which it will carry directly into freight car. The boxes reach loading platform on chute conveyor, shown under box at right.

an hour, and he is put to no more physical exertion than if he were taking a Sunday drive in his automobile.

The curing cellar is not the only place where power trucks are employed to cut costs of handling materials. Lift platform trucks are used to load freight cars. Boxes of produce ready for shipment are sent to the loading dock by way of a chute conveyor (Fig. 6). Workmen take the boxes off this conveyor and stack them on a platform. Then a lift truck picks up the platform, with its 2,000-lb. load, and carries it directly into the freight car (Fig. 7). There the boxes are piled by hand on the floor of the car. One ton is no small load for a man to handle, even though he be a husky. And, too, this system avoids toting boxes to and from the conveyance.

Eight platform lift trucks are in operation in one Midwestern meat plant, three being used to convey vats from the grading room to the curing room and five for loading cars. Two elevating trucks are employed in handling vats inside the curing room. All of these are electric units powered by batteries which are charged in the plant with a generator driven by a 25-hp. motor.

This method of handling materials has proven so effective that the purchase of several more trucks and charging equipment for the batteries is being considered by the packer.

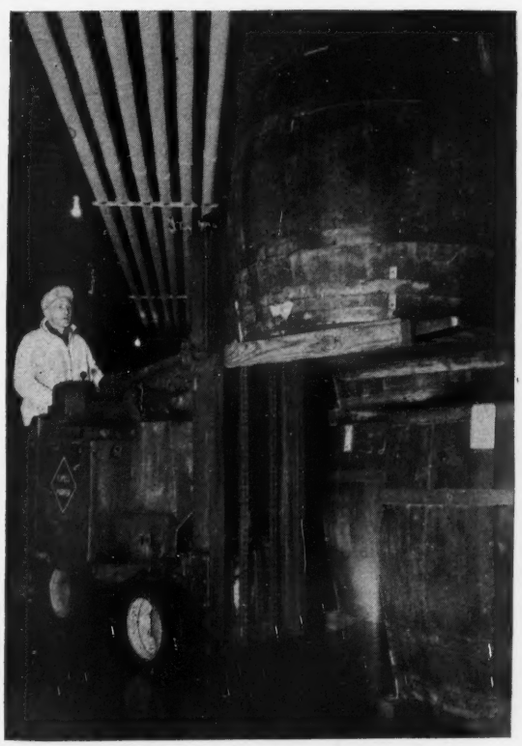


Fig. 5—View showing construction of skid and runners which provide clearance for platform of lift truck and fork of elevating truck, respectively.

Fig. 4—Elevating fork truck has lifted vat of meat from floor and is placing it on top of other vats.

elevating truck, with its ability to raise and lower filled vats and to carry them from place to place, makes it possible to move the vats about the curing room at will. And it permits any vat to be removed from the room at any time, because it can lift other vats from over and around it to make it accessible.

The packer uses the same vats that he had before he started handling them with power trucks. But he had to equip them with runners and skids (Fig. 5) so that the trucks could get under to lift them from the floor. Made of iron and fabricated in the plant's own machine shop by welding, the skids are high enough to clear the platform of the truck in the lowered position. And as the platform raises, both the skid and vat are lifted off the floor and are free to move about with the truck. The runners are 2x3-in. wooden pieces attached to the bottom of the vat to provide clearance for the lifting fork of the elevating truck used in the curing room. Figs 1, 3 and 4 illustrate clearly the purpose of these attachments. It is estimated to cost 50 cents to equip a vat with runners and $2 to build a skid to support it.

The efficiency of this method of handling materials in the packing plant lies not alone in eliminating one handling of the meat. The speed with which the meat is carried from the grading to the curing room is important, too. It formerly was a job for even a strong man to wheel 600 lb. of meat from room to room, and he moved at no more than ¾ mile an hour. Now one man with a truck transports 1,500 lb. of meat at 3 miles

Make the Most of Obsolescence *When Figuring Income Tax*

Ways to take full advantage of income tax obsolescence and depreciation deductions without going too far

By LAWRENCE R. BLOOMENTHAL
Attorney and Tax Consultant, Chicago and Des Moines

AGGRESSIVE competition may force a manufacturer to scrap a particular piece of equipment, though there may be ten years of useful life in the old machine yet. If one of his major competitors installs a newly developed unit so efficient as to substantially cut operating costs or to materially improve the quality of the product, it will be economical for him to scrap his old equipment to take advantage of the new. In which event a sudden loss of useful value in the old machine would take place.

Such displacement of existing machinery by new inventions is a common occurrence in modern industry. This fact is recognized by the Federal Government, and the income tax laws are framed accordingly. In addition to a reasonable deduction annually for depreciation, taxpayers also are permitted deductions for obsolescence and sudden loss of useful value.

There is no set rule for calculating depreciation. Business men may adopt any plan which provides a reasonable allowance for exhaustion, wear and tear. The "straight line" or "fixed percentage" method is most commonly employed because it is the simplest. The annual rate of depreciation is ascertained by dividing the cost of the property by the number of years of its estimated useful life. Regardless of actual operating costs, the same amount is taken each year.

Another well-known method utilizes the "unit of production." This may be based on hours of service, miles traveled or gallons pumped. Thus, if it is estimated that a machine will run for 4,000 hours, its cost is divided by this figure and the rate is applied to the number of hours it is actually operated each year. Because of the detailed record keeping involved, this plan is employed mainly in cases where machinery is in continual use over long periods of time.

SEPARATE rates of depreciation can be worked out for each individual piece of machinery, or a "composite rate" based on the average life of all machinery may be applied to an entire plant. Calculating depreciation on individual machines will give a more accurate picture of the deduction which should be claimed on income tax returns, but this method is likely to be too cumbersome for the average business. When each piece of machinery in a dairy, for example, must be listed at its own particular rate, extremely detailed records must be kept.

In order to avoid such expense and extra bookkeeping, a composite rate may be employed. Using dairy equipment as an illustration, for a pasteurizer costing $1,200 and having an estimated useful life of ten years, 10 per cent of the purchase price may be taken annually. Likewise, a tubular cooler might have an annual rate of 6⅔ per cent based on a fifteen-year life; a conveyor may be depreciated at 20 per cent; and finally, a pump might take a 5 per cent rate. To obtain the composite rate for these machines, all the percentages are added together and divided by four, resulting in an approximate average of 10 per cent annually for the group.

Instead of combining dissimilar items, a larger dairy might lump together all machinery which performs the same function. Several butter churns may be depreciated as a single unit, while another group might include all refrigerator compressors. The same principles apply to any type of machinery or vehicles, although dairy equipment was cited here.

There are situations in which machinery wears out faster than anticipated. This cannot be termed obsolescence or a sudden loss of usefulness because there is neither the introduction of more advanced equipment nor any reason for an immediate replacement in order to keep pace with competition. What actually takes place is that hard wear causes depreciation at a greater than normal rate.

Contentions of abnormal usage are examined closely by the Government. The burden of proof is always on the taxpayer, who must present evidence that such conditions were distinctly out of the ordinary and could not reasonably have been anticipated at the time the original rate of depreciation was set up.

There are several reliable sources from which executives can determine the effect upon the industry of new products, processes or machinery. Often, the bulletins of business associations serving a particular trade will supply advance information on coming changes to members. Trade journals, too, are a valuable guide, since they report new developments as well as practical experience in the laboratory and in the field. Advertising of manufacturers in magazines, catalogs and circulars frequently contains excellent summaries of technical progress. Should all these mediums agree that a change is on the way, obsolescence of existing machinery undoubtedly has set in. Should it become evident that existing units will have to be changed over or discarded, proper reserves for obsolescence should be established.

► No business man wants, or can afford, to pay more Federal income tax than he actually owes the Government. Nor can he risk the penalty of paying less. Which means that every man in business ought to be completely familiar with all the angles of figuring income deductions. Explanation of the various deductions for depreciation and obsolescence is contained in this article, making it useful to

All Food Manufacturers

Obsolescence is computed in much the same way as depreciation. The remaining unrecovered cost of present equipment is divided by the number of years of further usefulness. The difference between this figure and the amount normally taken for depreciation represents the sum allowable as an annual additional deduction for obsolescence.

POWER machinery with an estimated useful life of twenty years, would have a depreciation rate at 5 per cent. If the original cost was $4,800, then the annual depreciation would be $240. But after the machinery has been in operation for twelve years, a study of conditions may convince the plant owner that complete obsolescence will occur within the next five years, thus shortening the useful life to seventeen years. In that event, obsolescence is claimed on the tax return for the current year and the depreciation schedule is revised accordingly. Since $1,920 of the original cost has not yet been recovered, this amount is divided by the five years of further usefulness remaining. Thereafter, depreciation would be taken at the rate of $384, instead of $240, the difference of $144 representing the sum taken for obsolescence.

When this five-year period has expired, there is no legal compulsion to replace the obsolete equipment, but no further depreciation will be allowed. If fully depreciated machinery is continued in operation, however, the government is likely to dispute the charges for obsolescence so that the taxpayer might be forced to revise his estimate. Such adjustments frequently result in the imposition of additional taxes for earlier years.

Special machinery presents an interesting problem in obsolescence. Plant managers frequently order machinery to be built according to their specifications. Then if for any reason, such equipment becomes accessible to the trade generally, can obsolescence be claimed? No additional depreciation or obsolescence may be deducted merely because machinery is obtainable by competitors so long as it still retains its usefulness for the intended purpose. Nor does the lowering of its cost by quantity production entitle the taxpayer to any increase in allowable deductions. Standardization of special machinery causes obsolescence only when it results in more efficient operation, or a marked reduction in overhead expense due to greater ease of repairs or interchangeability of parts.

But protection against obsolescence of special machinery can be secured in several different ways. The purchaser may secure an agreement from the manufacturer for its exclusive use over a period of years, or if the design originated with him, he may apply for a patent. Then, too, illustrations or reproductions of the machine itself can be copyrighted to prevent their use in advertising sent out to competitors.

Like other property, patents may become obsolete by reason of new inventions which supersede earlier discoveries. In that event, obsolescence deductions may be taken on both machinery and patent.

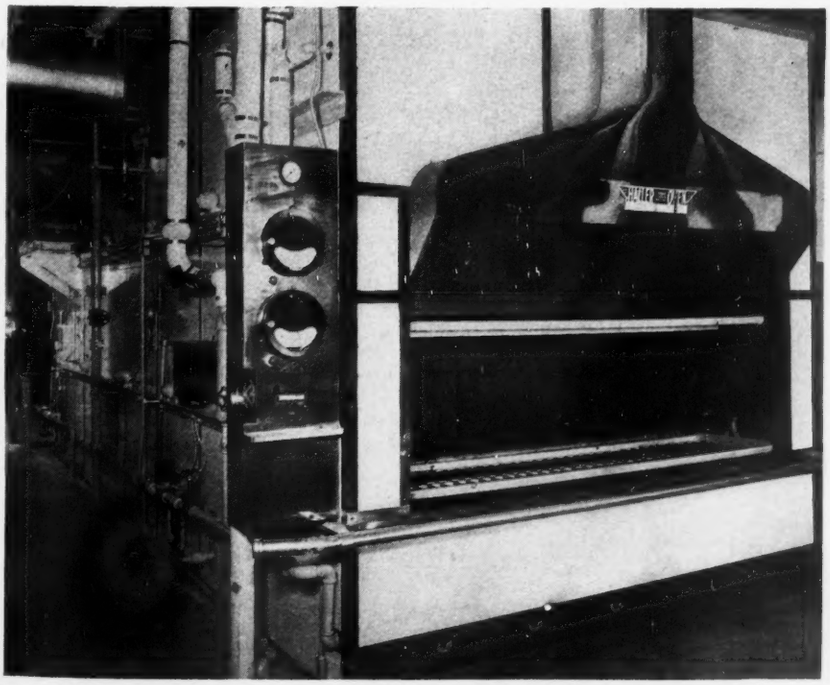
The past 25 years has brought about a complete revision both in plant layouts and in the manner of furnishing motive power to machinery. These factors have made multiple-story factory buildings less valuable since the standard factory design now calls for a one or two-story building with continuous production lines and individual motors for each machine. By means of endless conveyors, needless hauling, hoisting and shifting of raw materials is eliminated.

The Board of Tax Appeals recognizes the increase in depreciation resulting from this change and allows an additional deduction for obsolescence. In a recent case, the depreciation rate on a factory building was changed from 2½ per cent to 3⅓ per cent because recent trends had shortened its useful life from 40 to 33⅓ years.

HOWEVER, the mere erection of more modern buildings in the vicinity does not entitle owners of older properties to claim obsolescence. In every instance, ample proof must be presented that there is some general change which actually affects the life of the individual structure.

As a general rule, commercial buildings suitable for factory purposes can readily be converted from one type of manufacturing activity to another. Occasionally, however, a structure may be especially designed and constructed for a particular type of business and conversion to any other use will require extensive remodeling. But obsolescence does not begin merely because the occupant of a special purpose building plans to vacate it and the owner finds it difficult to obtain new tenants. Obsolescence could be claimed, however, after the building actually was vacant and a new tenant could not be secured, even with reasonable repairs or remodeling.

In contrast to the gradual loss of value known as obsolescence, property used in business may have to be discarded immediately on the introduction of new inventions. When this occurs, the income tax laws permit the remaining undepreciated cost, less any salvage value realized, to be deducted in full as a loss in the year the change took place.



Obsolescence in your plant is speeded by the installation in a competitor's factory of equipment of advanced design, such as this automatically controlled traveling tray oven in the plant of Pfaff Baking Co., Fort Dodge, Iowa.

Round Five—Coming Up

▶ *More and more on sugar refining costs. Some day we hope to button up this controversy by means of a last, incontrovertible word from a universally recognized authority — if such there be. Until then, apparently the warring factions plan to continue to present their views on just how sugar should be refined and what the cost should be.*

Meanwhile, the information on sugar costs that is brought out in this controversy is important to

All Sugar Users

Improved Equipment Promises *Lower*

Small revolving bone char revivifiers, fast high-column bone char filters, and clarifiers to replace pre-filtration units, as used in new small refinery at Milwaukee, said to give bone char refineries advantage over vegetable carbon refineries.

By WHITMAN RICE

National Sugar Refining Co., New York, N. Y.

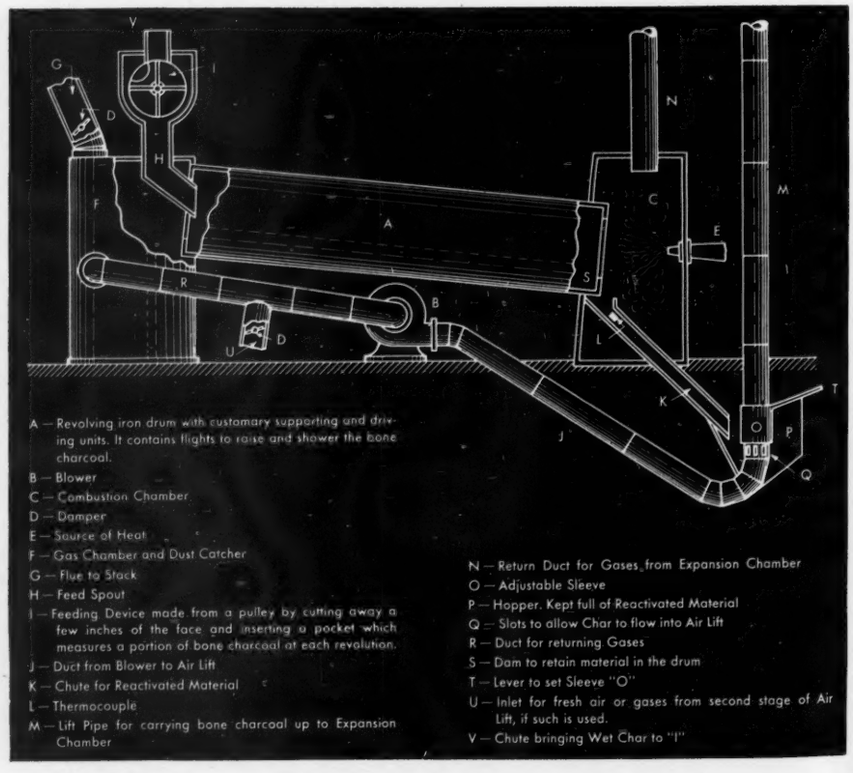
SINCE the matter of sugar refining costs seems not to be a private fight, perhaps my thirty-odd years in the sugar business will be sufficient excuse for offering some observations of my own on the matter. It may be readily understood that a more or less general tendency to pick on the old line sugar refining business should be resented by old timers who really know something about it and understand its vicissitudes.

Mr. Chapin has plenty of experience to call upon in handling his end of this discussion (see FOOD INDUSTRIES, April, 1939, page 193), but certain points may be more a part of my experience than his. Therefore, as a rejoinder to the last two criticisms of his article (see FOOD INDUSTRIES, May 1939, page 258, and June, 1939, page 319), I want to make plain that the spread of $0.866 per 100 lb. which he quoted as being the difference between raw and refined prices is actually what the customer does pay on the average; also that large sugar refiners in one city do not ship into other cities where refining is done, as implied by Mr. King, and, therefore, the average spread is not greater by any appreciable amount in one place as compared to another. Another fallacious point so often used to establish a cost is to compare a raw price at any given time with a then-quoted price on refined. The customer rarely, if ever, pays the quoted price but, as in the case of the $4.40 price as set forth by Mr. King, buyers were all contracted at $4.30. In his computation, Mr. Chapin did not point out that 100 lb. of raw sugar cannot produce 100 lb. of refined sugar and a 97½-test raw is 2½ pounds, at least, short of the required weight; and this will add $.0712 to King's quoted costs. Of course, sugars much better than 97½-test can be bought anywhere in the United States at differentials, under quoted refined prices, of 30 cents or greater.

The color in all raw sugar is almost entirely caramel and there are much greater amounts of other impurities than of caramel in raw sugar, so that merely decolorizing does not indicate any purification.

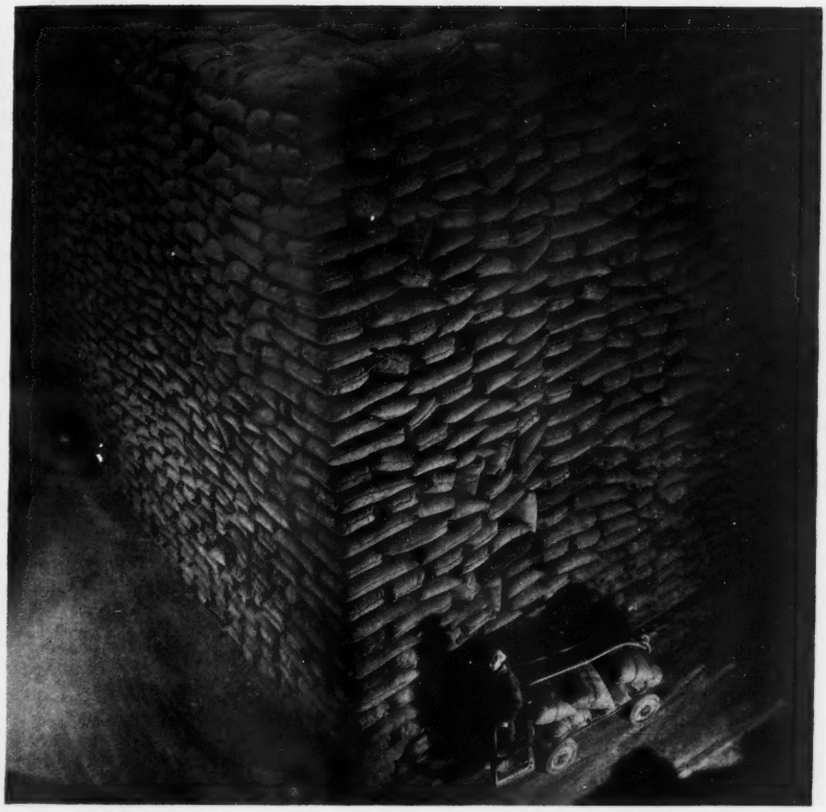
After all Mr. Wickenden has to say about the two methods of refining he finally concludes "it would seem clear that a vegetable carbon refinery is at no disadvantage in comparison with a bone char refinery." That is the best he can say for his process after comparing it with his concept of the old line method, which has been static for 50 years. Certainly no great revolution can be anticipated from new units whose claims only hope for a slight improvement over present methods.

It is very true that no bone char refineries have been built in recent years and for a very good reason, because no one who knows the busi-


A — Revolving iron drum with customary supporting and driving units. It contains flights to raise and shower the bone charcoal.
B — Blower
C — Combustion Chamber
D — Damper
E — Source of Heat
F — Gas Chamber and Dust Catcher
G — Flue to Stack
H — Feed Spout
I — Feeding Device made from a pulley by cutting away a few inches of the face and inserting a pocket which measures a portion of bone charcoal at each revolution.
J — Duct from Blower to Air Lift
K — Chute for Reactivated Material
L — Thermocouple
M — Lift Pipe for carrying bone charcoal up to Expansion Chamber
N — Return Duct for Gases from Expansion Chamber
O — Adjustable Sleeve
P — Hopper. Kept full of Reactivated Material
Q — Slots to allow Char to flow into Air Lift
R — Duct for returning Gases
S — Dam to retain material in the drum
T — Lever to set Sleeve "O"
U — Inlet for fresh air or gases from second stage of Air Lift, if such is used.
V — Chute bringing Wet Char to "I"

Sketch layout of bone char revivifying apparatus proposed in this article to replace the larger and more expensive kilns now in use

Sugar Refining Costs



Harold Halliday Costain

ness would build one like the present ones. Even a man raised under the shadow of a great refinery can vision possible improvements if sugar was not a political football and there could be any assurance of a return on further investment in sizable units.

Before jumping to conclusions, it is wisest to find out what can be done by those whose experience extends over a lifetime in the industry and who have for guidance all the traditions of the business. Critics of the large refiners always declaim about the size of the bone char plant and the char cisterns. Who cares how big they are so long as they are built and built from good cast iron? At least they are very nearly automatic and a half-dozen men can turn out ten to one hundred times the purified sugar sirups that the various vaunted small plants can do.

But let's talk about something novel and worth while. For instance, consider the diagrammatic outline of the bone char revivifier which is pictured here. Such a revolving kiln, with no need for pre-drier or cumbersome char cooling equipment, can, for an installation cost of $3,000 to $5,000 do as much, and do it better, than kilns now in use that cost $40,000 to $60,000. This kiln of a modern design requires one floor, and little of that. It can be made entirely automatic by use of the proper controls and it has been in actual use on a factory scale and is now incorporated in the small bone char refinery in Milwaukee. The general use of char has been somewhat modified in recent years and considerably less is required than formerly. If full advantage is taken of fast, high-column, filtration, 30 per cent to 50 per cent of the amount now used is sufficient. The costly prefiltration units now used by many have been more or less completely replaced in four refineries by clarifiers which are very cheap and simple iron tank affairs without any moving parts, but which do a remarkable job. Many years ago I operated one of the smaller bone char refineries and the raw sugar was melted without washing and all sweet waters were returned to the melter. Not having samples of the sugar produced, you will have to take my word for it that the output of that plant was equal to any produced today.

Proved equipment and methods for refining with bone char could greatly modify and simplify the flow sheet expressive of Mr. Wickenden's refinery. The sixteen units constituting the extreme left of his diagram (See FOOD INDUSTRIES, June, 1939, page 320) can all be replaced by one rotating kiln of the type illustrated in this article. All of the remaining black portion on the right would be replaced by six or eight sheet steel char filters at a maximum of $500 each and a Williamson clarifier which would cost about the same as a char filter. No other tanks, filters, "blow-ups" (which merely means a mixing tank agitated by air) or other equipment would be required further than that pictured in the light portion which he indicates as common to all refining plants.

As previously stated, it is possible to eliminate by use of bone char all centrifugals for washing raw sugar at a saving of $5,000 to $9,000 each, the number depending on the size of plant. It is also considered good practice in other countries for small plants to replace granulators at $5,000 each with other systems which cost about 10 per cent as much.

This sugar refinery which I have just described is no idle talk because all the units have been used in some form for periods ranging up to thirty years and they are now being combined in the new small bone char refinery mentioned by Mr. Chapin as situated in Milwaukee. With bone char, brown sugars can be made from the final products; and these bring a far better return than boiling the last syrups into raw sugar again and producing a poor final molasses.

Please consider this fact: The men employed in the bone char branch of the sugar refining industry are not narrow-minded above all others. They have all participated in exhaustive experiments on all new methods and equipment and have spent hundreds of thousands of dollars to find out the truth. They always continue to use bone char and that decision is founded upon scientific demonstration and sound business calculations and you can do yourself no good service by underestimating their abilities as judges of their own fate.

Creates POPULAR PRODUCTS From Unwanted Surplus

Peak supplies of poultry and unmarketable fresh eggs converted to profitable items through experiments in new methods of preparation.

POULTRY packers in recent years have been faced with a growing problem. It is what to do with the good poultry that they get in peak seasons but are unable to market as dressed or frozen poultry. They are placed in this position because egg producers cull their flocks at the end of egg laying cycles and look to the poultry packers for a ready market, as do producers who raise their flocks primarily for seasonal marketing.

To meet this problem, Washington Cooperative Egg & Poultry Association, Seattle, decided about ten years ago to increase, if possible, the market for poultry. It started an experimental cannery. And so successful was this project that the canning operations are now housed in a modern plant turning out 2,700 dozen of assorted canned and glass-packed products per eight-hour day over a period of a year—the largest operation of this kind in the West. In 1937 the output of the cannery represented 44 per cent of the poultry marketed by members of the association, with a market value of $639,387.

From merely canned roast chicken and canned spaghetti and chicken, the line of products has been extended to include 26 different chicken products which utilize the different parts of the birds to the best advantage. Even the chicken fat is processed by rendering in steam-jacketed kettles and packed in glass jars which show off the rich, nutritious, golden edible fat to a receptive buying public. The wings, necks and other "scrap" pieces are made into canned cat and dog foods. Chicken fricassee. chicken a la king, ravioli using chicken paste, chicken tamale and boneless roast chicken pack are some of the most popular specialties added to the line of canned products which have wide distribution all over the United States.

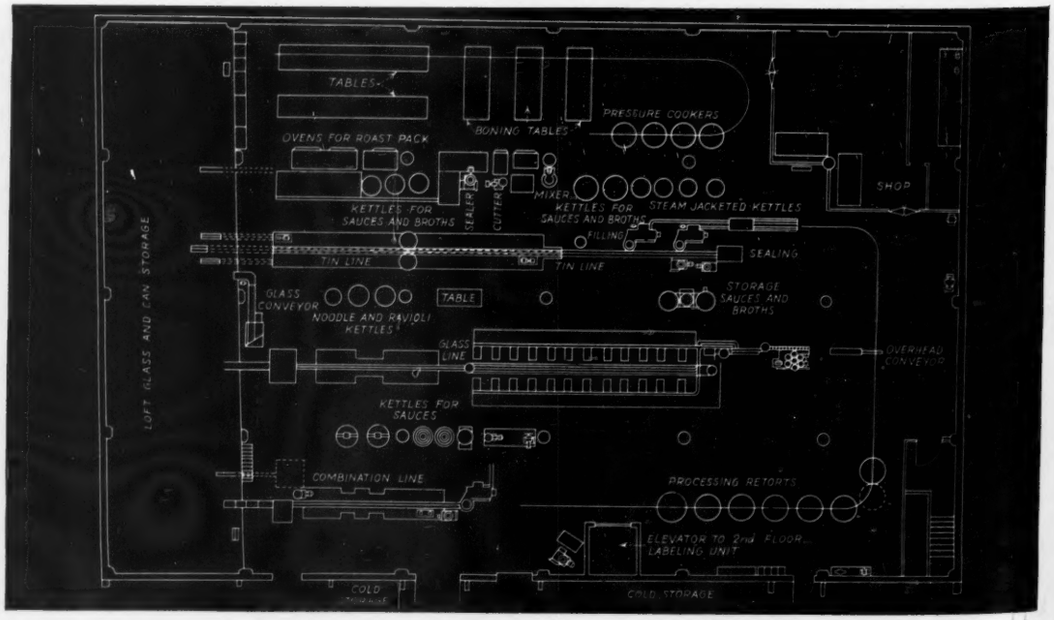
▶ ***New outlets for the foods which they process could be profitably used by most manufacturers in the industry. So the successful methods employed to increase the market for poultry and eggs, as described in this article, should be of interest to***

Poultry and Egg Packers
All Other Food Manufacturers

Much of the good eating qualities of the canned products are dependent upon the care and handling that the chickens receive before they go to the canning production line. So the cannery has a holding room where as many as 200,000 birds at a time are fattened into prime condition.

Studied experience has developed the slaughtering operations to a high state of efficiency, factory costs being kept low through continuous production and automatic equipment. And the latest and best technically developed practices for the killing and dressing of the chickens are followed.

Water in the scalding vat is held at approximately 126 deg. F., which is just hot enough to enable the rough pickers to remove the coarse outer wing and tail feathers without damage to the appearance and flavor of the skin and meat of the birds. This is an advantage over the ordinary wet-pick method in which scalding water of 170 deg. F. and over is used. From the scalding vat the birds go by a continuous moving shackle conveyor to a drier equipped with an electric fan. After a twenty-minute drying



Floor plan of poultry canning department in which straight-line production and automatic equipment enable a high-quality line to be offered at popular prices.

Here are thirteen of the twenty-six items of canned and glass-packed chicken products which Washington Cooperative Egg & Poultry Association is packing in a business that mushroomed from an experiment in surplus removal started ten years ago. The other thirteen are of a second brand.

period, they go to the wax-dip station where they are immersed in a heated wax bath. Then they move under a spray of cool water to set the wax for the clean-picking operation. As the wax is peeled off, all the remaining feathers, including pin feathers and hairs, which ordinarily are singed off, are removed to give a fully clean and feather-free bird.

From the final picking station, the birds are carried on racks to a pre-cooling room where as many as 3,000 may be held at 36 deg. F. for removal of body heat and preservation of the original quality and flavor of the meat. Minimum cooling time is eight hours, and after cooling the birds go to an eviscerating table equipped with an endless chain pan conveyor, at which is stationed a government inspector. Here ten to fifteen workers perform their individually assigned task in the eviscerating and dressing operations.

Next the birds are placed in steel drums which fit into the cooking retorts. For transfer to the retort room the drums are covered with tight-fitting lids and are placed in galvanized iron containers with casters.

Four retorts precook the chickens for ready removal of the meat from the bones, 35 to 40 minutes cooking time being sufficient. Boning is done by women workers seated at a stainless steel table conveniently near the retorts. The women sort the meat onto aluminum trays according to the use to which it is to be put. Special selection is made of the breasts, thighs and legs for the roast-chicken pack. These pieces are placed in electric ovens on trays, roasted, and the bones removed to get a solid pack.

Precooked meat for other chicken products is packed into molds and held at 32 deg. F. for at least eight hours for shaping by natural gelatin content preparatory to slicing or other preparation for the pack in which it is used. Grinders and slicers prepare the meat for such products as spaghetti and chicken, ravioli paste, chicken tamale and similar products.

A combination glass and tin packing production line runs the length of the cannery room. A glass-container chute and a tin-can runway lead from an overhead storage directly connected with trackage and unloading docks to which supplies are delivered. The packing line consists of a three-channel conveyor in which the third, or fricassee line, was included because of market demand for that product. All of the slower hand-packing operations are done at stations supplementary to the main packing line.

After being filled and closed on automatic machines, both the jars and cans pass through a washer or water-spray station before being loaded into steel baskets, raised with electric hoists and carried by overhead trolley to final cooking or sterilizing retorts. Two steam and four water retorts are employed, these having a capacity of 792 dozen No. 1 cans per charge. Following retorting and careful cooling to avoid glass breakage, the finished jars and cans are elevated to the upper floor, on a level with the loading docks, to be labeled, cased and made ready for shipment.

But the poultry cooperative does not confine its factory operations to cooking and packaging chicken products. Since its members are essentially in the egg producing business, there is a percentage of oversize, and shell-checked or cracked eggs that cannot be marketed as fresh shell eggs. These byproduct eggs are converted into frozen egg-meats, dried yolks, dried whites, dried whole eggs and a new patented product known as "Ovolo." The latter consists of 50 per cent sugar and 50 per cent white, yolks or whole egg-meats and is processed to retard deterioration at normal room temperature. No less than 57,000 cases of these non-marketable eggs were processed in 1937 to add $420,000 to the cooperative's volume of sales.

Other poultry specialties added to the cooperative's line of products to boost the 1937 volume of sales were frozen "Pan-Prepared Broilers," "Pot-Prepared Hens" and "Full-Drawn Pack." "Pan-Prepared Broilers" are top-grade birds dressed in the usual manner, split down the back and packed flat (two birds to the package) in waxed cardboard cartons with a cellophane sheet inside the lid. Then the birds are quick frozen and kept at a low temperature until sold. "Pot-Prepared Hens" are packed in a similar manner except that the birds are cut up ready for cooking. The "Full-Drawn Pack" is the same as that known as "Ready-to-Cook" in other markets.

All in all, the experiment started less than ten years ago has become such a going enterprise that in 1937 the cooperative had an 8½ per cent increase in poultry and egg business over 1936; a total sales volume of $20,166,367 for all departments of the business.

Keep Fermenting Kraut Cold

Better Than Adding Carbon Dioxide

DR. PEDERSON, to whom goes the honor of unsnarling the complex fermentation of sauerkraut, believes that our suggestion in April FOOD INDUSTRIES is not entirely economic, though it may be technically feasible. He also believes that a cold kraut fermentation gives better quality than a warm one. Evidently, any effort to hasten the fermentation by higher temperature is a sacrifice of quality.

By C. S. PEDERSON
New York State Agricultural Experiment Station
Geneva, N. Y.

IT was with interest that I read the editorial on page 183, April, 1939, FOOD INDUSTRIES, on the possible use of carbon dioxide in the fermentation of sauerkraut.

The idea is worthy of thought and may be of value under certain conditions, for example, when the temperature is too high for an ideal fermentation.

There is little doubt that carbon dioxide has a definite value in preservation of sauerkraut during the fermentation and in controlling the nature of the fermentation. The paper referred to in the editorial brings out the importance of carbon dioxide in control of pink kraut or other spoilage conditions. A still later paper emphasizes the importance of carbon dioxide in retaining the ascorbic acid (Vitamin C) content of sauerkraut at a high level.

It has been known for a long time by kraut manufacturers that gas is produced during a good fermentation. The appearance, due to gas evolution, of foam on the surface of kraut vats within a few days after packing has always been considered by kraut manufacturers as a desirable condition. Kraut was formerly considered completely fermented a few days after these gas bubbles had subsided. Now, more exact methods of determining completeness of fermentation by titration of acid are in general use.

In kraut factories, gas is often produced so abundantly during early fermentation that it has been impossible to work in the partially filled vats the second day of filling. Of course, the practice of partially filling tanks one day and completing it the next, has been almost wholly discontinued; nevertheless, some kraut is packed on successive days.

It is also well known to kraut packers that fresh kraut juice taken from a vat of good kraut is heavily charged with gas which bubbles off when opened to the air or warmed up. This gas has given to the juice a sparkle and zest which would be most desirable if it could be successfully retained in canned or bottled kraut juice.

A German worker early described the gas of kraut as a mixture of carbon dioxide, hydrogen and methane, but careful investigations at the University of Wisconsin have conclusively shown that the gas evolved during a good fermentation is made up entirely of carbon dioxide and entrapped air. Work at this Station has indicated that the organisms responsible for fermentation only produce carbon dioxide gas.

DURING a normal kraut fermentation, that is, when the temperature is below 75 deg. F. and the salt content is between 1.8 and 2.5 per cent, and all other conditions are carefully controlled, the fermentation is started by a group of organisms known to bacteriologists as *Leuconostoc mesenteroides*. These are gas producing organisms and within a short period of fermentation, sufficient carbon dioxide is produced not only to flush out the air in the kraut, but also to saturate the kraut and juice with carbon dioxide. During the entire period of a normal fermentation, conditions maintain a continued carbon-dioxide saturated product. This, of course, will depend to a large extent upon temperature conditions. Naturally, raising the temperature of the surrounding will lower the solubility of the carbon dioxide. When loss of carbon dioxide from the surface is pronounced, surface fermentation or spoilage may be increased. This secondary fermentation may be of such nature that gases other than carbon dioxide may be produced. Since such other gas as hydrogen, for example, may be less soluble, it may tend to disturb the natural solubility, possibly supersaturation, and therefore the carbon dioxide content may be still further lowered.

During a nomal fermentation, carbon dioxide is evolved and the surface of a tank is more or less blanketed with the gas. This is undoubtedly the main reason why secondary spoilage fermentations do not occur when kraut is fermenting rapidly. Also, insects do not lay eggs on the kraut during this period.

In faulty fermentations, due to any one of a number of causes—raised temperature of fermentation, too high a salt content, or introduction of a large number of other organisms—the fermenting flora may be changed sufficiently so that little carbon dioxide is produced. Acidity may be produced in an apparently normal manner and to all intents the kraut is normal. Still, such kraut is more subject to spoilage conditions which are normally inhibited by carbon dioxide. Further, under certain conditions of storage of kraut in vats, particularly if the temperature has been raised so that other vats of kraut may ferment properly, the carbon dioxide content may be lowered so as to lose its protective effect.

Undoubtedly under such condition it would be extremely helpful if the kraut could be protected from atmospheric conditions by replacing entrapped air and surface air with carbon dioxide. On the other hand, the cost and the practical difficulties of introducing carbon dioxide in amounts comparable to that normally present in good kraut must be considered. We should realize that a 250 barrel vat of kraut would contain approximately 75 barrels of dissolved carbon dioxide, measured as gas or the equivalent of a 60 lb. piece of dry ice. But since so much of the difficulties of spoilage are experienced at or near the surface of kraut, it seems logical, if not practical, to cover the surface of kraut with a blanket of carbon dioxide. It may be of value under certain conditions, particularly over those vats of kraut which have a high temperature, or in which the kraut will have to be held for a period of time. There is little doubt that quality of produce may be held at a higher level and that loss of ascorbic acid (Vitamin C)

(*Turn to page 417*)

UNITED STATES DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

TENTATIVE UNITED STATES STANDARDS FOR GRADES OF

FROZEN PEAS

(EFFECTIVE FOR ONE YEAR BEGINNING MAY 25TH, 1939)

DEFINITION

FROZEN PEAS are the vegetable prepared from the seed of the common garden pea (*Pisum sativum*) by shelling and thorough washing, with or without grading as to size, with proper pre-cooking (blanching) and are frozen and stored at temperatures necessary for the preservation of the product.

GRADES OF FROZEN PEAS

»» ***U. S. GRADE A (Fancy) frozen peas,*** are peas of similar varietal characteristics; possess a uniformly green color; conform to the size, or combination of sizes claimed for the peas; are reasonably free from skins and broken peas and practically free from other defects; are practically free from foreign material; are tender, possess a normal flavor, and score not less than 85 points when scored according to the scoring system outlined herein.

»» ***U. S. GRADE B (Extra Standard) frozen peas,*** are peas of similar varietal characteristics; possess a fairly uniform green color; conform to the size, or combination of sizes claimed for the peas; are fairly free from defects; are practically free from foreign material; are fairly tender, possess a normal flavor, and score not less than 70 points when scored according to the scoring system outlined herein.

»» ***OFF-GRADE Quality frozen peas,*** are peas which fail to meet the requirements of the foregoing grades or score in subdivision D in any one of the scoring factors.

NOTE: Condition and quality of frozen peas, as outlined in these grades, will be determined immediately after thorough thawing in tap water at room temperature (approximately 68 deg. F.).

DEFINITION OF SIEVE SIZES

When graded for size, a tolerance of 5 per cent by count will be allowed for variations incident to commercial grading and handling.

No. 1 size peas are peas that will pass through a screen of 9/32-inch mesh.

No. 2 size peas are peas that will pass through a screen of 10/32-inch mesh, but not through a screen of 9/32-inch mesh.

No. 3 size peas are peas that will pass through a screen of 11/32-inch mesh, but not through a screen of 10/32-inch mesh.

No. 4 size peas are peas that will pass through a screen of 12/32-inch mesh, but not through a screen of 11/32-inch mesh.

No. 5 size peas are peas that will pass through a screen of 13/32-inch mesh, but not through a screen of 12/32-inch mesh.

No. 6 size peas are peas that will pass through a screen of 14/32-inch mesh, but not through a screen of 13/32-inch mesh.

No. 7 size peas are peas that will pass through a screen of 15/32-inch mesh, but not through a screen of 14/32-inch mesh.

EXPLANATION OF TERMS

As used in these grades:

"Run of the pod" means peas of all sizes have been packed together.

"Garden run" means that all sizes have been packed together except that peas of sieve sizes No. 1 and No. 2 have been eliminated.

"Broken peas" means that the pea is so damaged that a cotyledon or portion thereof has become separated from the pea.

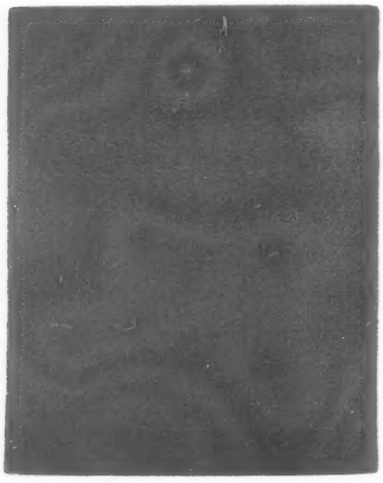
"Practically free from foreign material" means that there shall be not more than an average of one piece of foreign material approximating the size of peas, such as thistle buds, per pound of frozen peas, or per package, if the contents of the package are less than one pound. However, the total of such defects shall not exceed the rate of one for each pound of peas.

"Normal flavor" means that the peas are free from objectionable and off flavors of all kinds.

CONDITION OF PACKAGE AND LABEL

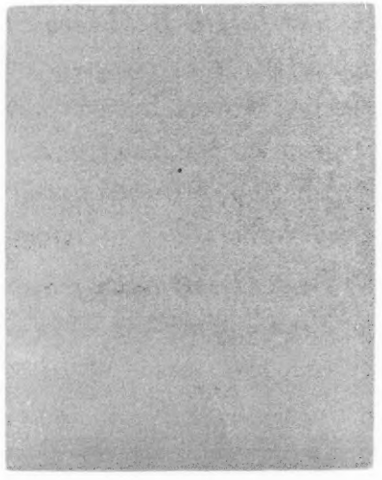
Containers shall be sound and clean. Labels shall comply in all respects with the requirements of the Federal Food, Drug and Cosmetic Act.

This color matches Plate 17, L-9 "Dictionary of Color," by Maerz and Paul[1]



[1]Plate 17, L-9 is also unofficially identified as Munsell 7 Green Yellow 6/8—THE EDITORS

This color matches Plate 17, K-6 "Dictionary of Color," by Maerz and Paul[2]



[2]Plate 17, K-6 is also unofficially identified as Munsell 5 Green Yellow 7.8/6—THE EDITORS

ASCERTAINING THE GRADE

The grade of frozen peas may be ascertained by considering the following factors: Color, absence of defects, and tenderness and maturity. The relative importance of each element has been expressed numerically on a scale of 100. The maximum number of credits which may be given for each factor is:

	Points
I. Color	30
II. Absence of defects	20
III. Tenderness and maturity	50
TOTAL SCORE	100

ASCERTAINING THE RATING OF EACH FACTOR

The essential variations within each factor are so described that the value may be ascertained for each factor and expressed numerically. The numerical ranges within each factor are inclusive. For instance, the range 14 to 16 means 14, 15, and 16.

»» I. COLOR*

(A) Peas that are practically uniform in color and possess a characteristic green color not lighter than Plate 17, L-9, may be given a credit of 26 to 30 points. Peas that do not meet this requirement shall not be graded above U. S. Grade B (Extra Standard), regardless of the total score for the product.

(B) If the peas are variable in color, with not more than 10 per cent by count of the peas lighter than Plate 17, K-6, a credit of 22 to 25 points may be allowed.

(D) If the peas are markedly of poor color or generally lighter than Plate 17, K-6, a credit of 0 to 21 points may be allowed.

*NOTE—Colors, as illustrated in Maerz and Paul: "Dictionary of Color."

»» II. ABSENCE OF DEFECTS

(A) Peas that contain not more than 1 per cent by count of spotted and off color peas, nor more than 10 per cent by count of broken peas and loose skins, may be given a credit of 17 to 20 points. Peas that do not meet this requirement shall not be graded above U. S. Grade B (Extra Standard), regardless of the total score for the product.

(B) If the peas contain not more than 4 per cent by count of spotted and off color peas, nor more than 15 per cent by count of broken peas and loose skins, a credit of 14 to 16 points may be allowed.

(D) If the peas contain more defects than the maximum allowed in subdivision B, a credit within the range of 0 to 13 points may be allowed.

NOTE—Off colored peas such as brown, white or yellowish-white, that are considered defects, shall not be considered under Factor I—Color.

»» III. TENDERNESS AND MATURITY

(A) Peas that are tender and contain not more than 10 per cent by count of peas with skins removed that will sink immediately in a 13 per cent solution of salt (NaCl)**, may be given a credit of 42 to 50 points. Peas that do not meet this requirement shall not be graded above U. S. Grade B (Extra Standard), regardless of the total score for the product.

(B) If the peas are somewhat mealy, hard or starchy but contain not more than 5 per cent by count of peas with skins removed that will sink immediately in a 16 per cent solution of salt(NaCl)**, a credit of 34 to 41 points may be allowed. Peas that fall in this classification shall not be graded above U. S. Grade B (Extra Standard), regardless of the total score for the product.

(D) If the peas are over mature, a credit within the range of 0 to 33 points may be allowed.

**—This test shall be made in brine at 68 deg. F.

NOTE—The quality of frozen peas as outlined in these grades will be determined immediately after the peas have reached a temperature of 68 deg. F., after thoroughly thawing in tap water at room temperature.

Approved

C. W. KITCHEN

Associate Chief of Bureau

Certificate No. .....
Lot or Car No. .....
Size of lot .....

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
SCORE SHEET FOR FROZEN PEAS

Applicant .....
Address .....
.....

Samples submitted by

FACTORS	Max. Score	Points Allowable										
PACKAGE SIZE												
PACKER'S MARK												
LABEL												
NET WEIGHT (in ounces)												
I. COLOR	30	(A) 26—30 (B) 22—25 (D) 0—21										
II. ABSENCE OF DEFECTS	20	(A) 17—20 (B) 14—16 (D) 0—13										
III. TENDERNESS AND MATURITY	50	(A) 42—50 (B) 34—41 (D) 0—33										
TOTAL SCORE	100	.....										
GRADE	...	.....										

Remarks.....

Graded by..... Date..... Fee $.....

REFRIGERATION—Not Freezing

Will Improve Profits in Baking

By W. E. BROEG
Parker-Broeg, Consulting Food Critics
Boston, Mass.

Bakery department of a Boston supermarket at 4 p.m. on a Saturday afternoon. Note the crowd of buyers and compare the scene to that in the same department at 11 a.m. on Tuesday, as shown in the picture on the next page.

Part I

FRESH bakery products—possessing true oven freshness—will always capture public acceptance. Yet, how to retain this freshness long enough to effect the desired distribution of the bakery products is a problem.

Refrigeration or freezing of the finished goods—the latest proposal for retaining freshness—is probably too far away in the distant future to be counted upon as a material help. Freezing of bread, for example, may hold a theoretical possibility, but the cost of creating a consumer acceptance for frozen bread would be too great.

To sell the public on a product like frozen vegetables that must be cooked and served hot is one thing. But to sell the public a product that must be defrosted and consumed cold or without further heating is decidedly something else. Conceivably, it will be very difficult to persuade the public to enjoy bread, cakes or rolls that have condensed moisture on their chilly surfaces on a day of high humidity.

Hence it appears unlikely that the problem of preservation of the perishable quality of baked goods is to be solved by application of refrigeration *after* the goods are baked. On the other hand, the application of refrigeration *before* baking holds great possibilities for the baking industry.

Such a drastic change from established eating and purchasing habits of the public as would be involved in the sale of, for example, frozen bread is definitely not the way to bring oven freshness to the consumer's table.

Freshness is the lure that drew thousands of women to the System Bakery with its oven in the shop window in years gone by. But the System Bakery had a novelty appeal that was, alas, very short lived. It is doubtful if many of them are still in existence because Mrs. Public seemed to become bored with the System and the everlasting sameness of its products. Also, the effect of the depression in forcing much baking back into the home, plus the inexperience of the System operators (many were ex-saloon keepers), were additional factors in the disappearance of these window bake shops.

Knowledge of this lure of freshness has made bakers realize that they had to make better goods and get them to the consumer in as short a space of time as possible between oven and table. The rapid growth of the multiple unit and the house-to-house baker has been a result of this knowledge. They carefully prepared their items and rushed them to the consumers' homes, but the higher cost of this form of distribution has been an unsolved problem.

Freshness is also the lure that draws women to the bakery department of the supermarket where the "bargain shopper" stampede toward an approaching load of fragrant bread or rolls, right from the oven, is a familiar sight in many places. Here at least is oven freshness, plus low cost distribution.

In such a situation there would seem to be more of a permanency of demand than existed in the older System Bakeries. Yet, supermarket bakeries have their drawbacks of another character. It is harder to make the supermarket's baking department pay the proper profits for the reason that most of the shopping demand comes at the end of the week. Thus, the shop must have a capacity equal to the Friday and Saturday peak demand but on Monday, Tuesday, and Wednesday a supermarket usually presents a vastly different picture. In

fact, during the early part of the week, some supers are about as lively as a street carnival during a downpour of rain, while the family of Mrs. Public is consuming the stock of goods that she brought home on Saturday.

Under conditions such as these, the extreme fluctuations in the demand are most disheartening. And about half the week's sales will come on the last two days.

The feverish haste with which the operators of some supermarkets have installed baking departments suggests that the economics of supermarket selling of bakery products may have taken a place secondary to that of promoting the lure of freshness. Nevertheless, it is very clear that oven-fresh baked goods do attract the public.

The future of supermarket baking should be considered with care. Certain people can always be counted on to buy "wholesome" though comparatively uninteresting baked goods, if sold at a price, as is often done in the super. And price is admittedly one source of the attraction of a supermarket. As supermarkets continue to grow in number, their extreme competition may make it necessary for the operators of supermarket bakeries to increase their quality and appeal to the class of buyer who has more money and wants the "unusual" or at least the "better" baked products. Even the low income buyers prefer the better made products to the common, extremely plain, slap-bang production items that have been put out in tonnage quantities for supermarket merchandising at a price. To meet this probable trend of events, the use of refrigeration offers a solution to the problem of profitable supermarket baking.

The Market for Bakery Products

According to statistics, more than two million people reach their majority each year. Two million adults, ready and eager to buy attractive and tasty baked foods. Two million new customers every year who never have heard of a System bakery and who are susceptible to new buying influences. Added to this is the fact that the average woman is not particularly fond of baking. They would much prefer to buy, provided the quality they demand can be purchased at a reasonable price. The potential demand is enormous—almost unlimited.

How to Capture this Market

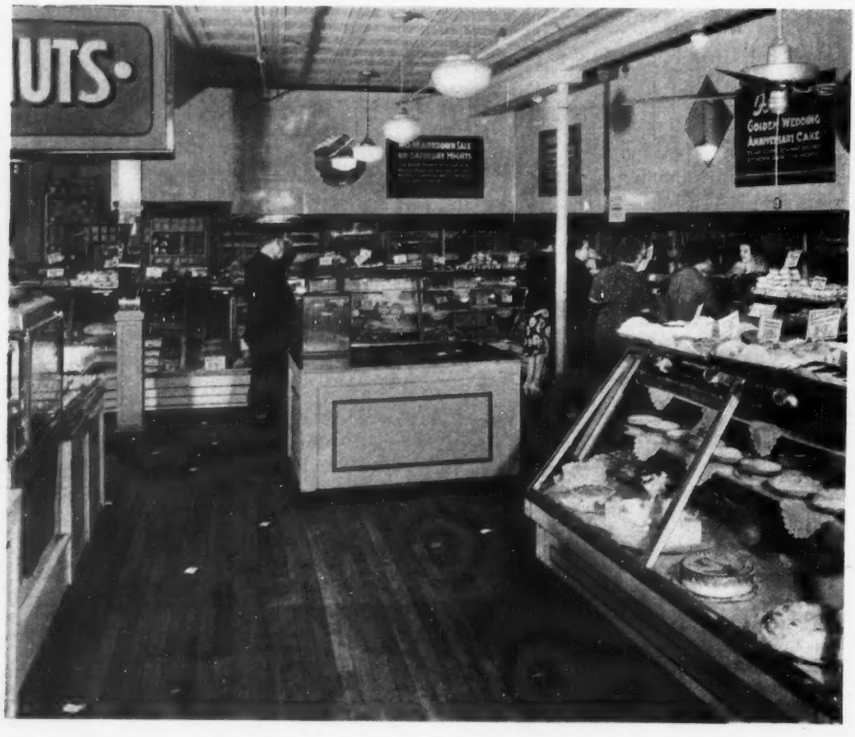
In capturing the potential market for baked goods, refrigeration will play a very important role. But it will not, from the present outlook, be for the purpose of distributing foods in frozen form. It will rather be utilized to refrigerate bakery products without freezing them, both before baking and afterwards. Specially designed refrigerators will be essential for the production and sales departments. Such refrigerators will make possible the profitable production and sale of many of those products which are not made in the average shop today.

In order to shorten the "oven-to-consumer" period these refrigerators will make it possible to prepare, once a week, or perhaps every other week, large basic batches which may be kept under refrigeration and baked in small quantities as the demand may require. Thus "Hot Stuff" can be produced with extreme promptness just as needed by the sales department without producing an oversupply. And the correct use of refrigeration will also permit drastic changes in the routine of large central commissary bakeries, all in the interest of economy and oven-freshness.

With refrigeration of the foregoing type it is possible to mix either partially or completely made up pastries, rolls and bread doughs to be held under refrigeration until needed for actual baking. Developments in the newer uses of refrigeration in baking, known as the "Retarded Dough Method" have opened new avenues to success.

By refrigeration of the dough, the development of carbon dioxide which leavens the dough is retarded at any desired point, whether the gas is produced by yeast or by the interaction of chemicals known as baking powder. It is possible to hold the completely finished or partially finished "make-up" of practically all varieties of baked goods including many bread varieties, rolls, pastries, pies, cookies, cakes, and what not.

Whether the baker knows it or not, he is today on the threshold of becoming one of the future major users of refrigeration equipment, for the reason that economic necessity is forcing it upon him.



Bakery department in the same Boston supermarket at 11 a.m. on the Tuesday following the Saturday when the picture on the preceding page was taken. Note that few shoppers are present on this week-day morning.

In Part II, Mr. Broeg will discuss the equipment that is needed in the Bakery of the Future. It will be a reversal of a characteristic trend of the past. Also, he will describe the plan of operation of shops employing refrigeration in the best manner and show how and where costs will be changed and profits will be improved. Whether you are a baker or not, you will be affected by the new technology. For if people eat more baked goods, they eat less of something else. Don't miss the second part of this article.

—THE EDITORS

More Mistakes To Avoid in Packaging

PART V

EDITOR'S NOTE: *This series will run for several months until it is completed*

EVERY EXAMPLE is based on actual errors of packaging. Publication of the negative aspects of packaging is frequently more informative than the mere statement of a bunch of rules to follow. Particularly is it important to bring out the reasons why, and the automatic penalties that develop because of making mistakes.

175 **Hermetic sealing omitted** from candy packages caused this loss. An enterprising manufacturer thought that he could pack chocolates under controlled conditions in the slack summer period and hold them in cold storage until the market demand arose later in the year. He tried it. But the storage temperature was too low, and the packages were not hermetically sealed. When he removed the packages from storage to normal temperature, the package breathed, and the air interchange caused each chocolate to act as a condenser of moisture. The result was sugar bloom. Had he used a sealed (air-tight) package, or else tempered his chocolates by a very gradual rise of temperature over a period of days, he could have succeeded.

This type of handling requires either hermetically sealed packages to stand the gaff of low-to-high temperatures, or else the temperature change must be progressive but gradual.

176 **Carton Changes Need Foresight** — Changes in type of cartons for foods are especially dangerous unless due consideration is given in advance to the adhesive. Cartons containing food products can be sealed easily and efficiently by either hand or machine with adhesives that have no objectionable odors—provided, that they are made up with flaps that are free from varnish, printing ink, or other coatings.

We have records of number of instances where concerns in the food field have decided to dress up their packages, and have used varnished or lithographed cartons, etc., only to find that, after placing a large order with the carton manufacturer, glues for sealing these cartons presented difficulties; and are, as a rule, considerably higher in price than ordinary grades.

177 **Error With Greasy Products**—Where a carton liner is used and the closure is made by interfolding the carton-liner with the flaps of the carton, it is conventional practice to fill the bottom side of the carton (as established by the printing on the carton) and interfold the liner with the bottom flaps of the carton. This is done so that the consumer, on opening the top, will not be confronted with the interfolds, and will have presented to her a neater appearance.

This convention should be avoided when a greasy product is being packed and a greaseproof liner is used. Reason: the interfolds do not contribute the complete grease protection that is offered by the liner itself. And the dealer, placing the packages right side up on the shelves, shifts the greasy product towards the unprotected interfolds. Hence the carton itself slowly absorbs grease, causing an unsightly and dirty appearance on the outside of the carton.

178 **Tropics Caused Container Shrink**—A shipper of dry foods packed in composite cans (convolute wound paper bodies with tin ends) failed to consider possible shrinkage of wooden shipping boxes.

The oversight became apparent when shipments were made to tropical points. The wooden boxes shrank to such an extent that the cans inside were actually crushed.

Correction of error was made by lining the boxes in subsequent shipments with corrugated paper pads. If the wooden boxes were not subjected to drying out conditions the cans were kept firmly in place by the pads. If, on the other hand, the boxes did shrink the height of the corrugations was sufficient to compensate for the shrinkage, so that the corrugations were flattened out during the shrinkage and the cans were protected against being crushed.

179 **Packages All Stuck Together**—A large cracker baker was suddenly faced with the problem of replacing several thousand cases of packaged crackers already in the hands of retail dealers. A careful investigation disclosed that the crackers were improperly cooled before packaging, thus releasing heat after the wrapping operation, subsequently causing a strong seal to develop between the packages which was impossible to break without tearing the wrapper.

Moral: Temperature may be only skin deep.

180 **Top-Heavy Bottles Cause Trouble**—A common source of difficulty is the design of a bottle which is tapered to a small base. This requires either special discharge turrets, or else loss and breakage due to the bottles falling over on the chain conveyor.

181 **No Allowance for Wrapper Shrink**—Mr. X, the vice-president and sales manager of a candy manufacturing organization, visited the wrapping department and after a casual observation insisted the transparent wrap be placed smoothly and snugly around the box. In other words, he conscientiously wanted to see the box in his own plant the way he thought it would be seen on the retail counter. The natural result was excessive breakage in all parts of the country and the natural accusation that the manufacturer was using an inferior material.

Moral: Consult the wrapping supplier before taking drastic steps in packaging procedure.

182 **Improper Position of Inner Bag**—A manufacturer of dessert powders found that he was getting quite a great many complaints of sifting and loss of content. His product was quite dense, granular and free-flowing. It was packed in a small bag and then placed in a carton. The trouble was finally traced to the fact that the bags had been inserted in the carton in such a way that the gussets of the bags were not supported by the walls of the carton. The result was that when shipping cases were dropped or roughly handled, the powder tended to flow, and, by "hydraulic ram" action, split the seams of the bag.

As soon as the bags were inserted in the carton, so that the walls of the carton supported the gussets, this complaint ceased.

183 **Bags That Leaked Through Meshes**—I have seen sugar bags holding 100 lb. which lost a good deal of sugar through the meshes, and also through the enlarged holes where they had been sewed up. Several preserving plants have observed this condition which results in the loss of considerable sugar and the messing up of the floor.

184 **Wrong Cap Specifications**—Manufacturer complained that his capping machine was not putting caps on tightly, and stated that the bottles were leaking after they had been capped. Investigation disclosed that a new cap with a longer skirt had been adopted, and the bottom of the skirt of the cap was now coming in contact with the usual bead on the neck of the bottle. This prevented proper seating of the liner inside of the cap onto the top of the bottle, thereby permitting leakage.

185 **Labels for Oily Products**—I recall a product which comprised an oily substance. Just as soon as the glass container was opened there was a tendency for a few drops of the oil to run down on the label where it would promptly obliterate the lettering. It was necessary to remove the labels from all the packages and relabel them.

The remedy was simple. The printer made up labels from various colored papers including gold and silver. Each sample label was then streaked with the oil, and it was then possible to classify 25 per cent of the labels as worthless, 50 per cent of them as fairly good, and 25 per cent as excellent. It was, therefore, not so difficult to select a label which would be substantially if not entirely stain-proof against the oil.

186 **Improperly Sealed Sacks**—Complaints of damage in transit disclosed that a powdered product in moisture-proof paper containers placed into sacks was not satisfactory. Many of the sacks were coming open, allowing the paper container to be exposed and torn, and the product lost. Upon investigation it was found that the sacks were sealed by being gathered at the top and then tying with a piece of twine around the gathered material. The twine slid off the top of the sacks and permitted them to open. Trouble was obviated by folding over the sack and stitching loosely with twine, using a sail-maker's needle.

187 **Ink Bleed Too Wide**—Even ink will prevent the penetration of adhesive and may result in improperly sealed packages that sift out their products. And this is not due to any faulty machine operation. A bleed of 1/16-in. should be sufficient to serve the purpose of a good appearance.

188 **Too Many Sizes Raises Costs**—Change-over parts cost money. Also the time to make the changes from one size to another costs money. Hence in designing a family of different packages of different sizes, it is desirable to adopt similar shapes so that as many sizes as possible can be handled with the same feed parts and rail adjustments on the filling machines. In this way, the number of parts required to handle the various capacities is kept down to a minimum and the time loss in changing is reduced.

189 **Failure to Allow for Expansion**—A reuse container for tomato juice in the form of a flat whiskey flask was ordered for a special sales campaign. Every container burst when the juice was sterilized by heat. Although the flasks would hold the correct net weight of contents when cold, there was not sufficient head space to permit expansion of the contents during heat sterilization.

190 **Gasket Should Suit Product Packed**—A common difficulty is putting closures for glass containers to the wrong use. A packer used the correct type of closure for strawberry jam. Then when an order came in for peanut butter he put the same closures on that product. Which was an error, for the sealing gasket was not adapted to the job it was to perform. A very definite amount of oil leakage occurred, which spoiled the appearance of the package.

191 **Improper Preparation of Product**—Recently I have observed a case of the manufacture of onion powder, which was placed in a shaker-can without the use of calcium phosphate. The substance became so hard that it could not possibly shake out. Probably this is true of certain other powders.

192 **Product on Outside of Container**—In a certain plant a partially frozen, but smooth-flowing product, was filled into containers which were closed by placing on them slip covers which over-lapped the upper edges of the container. It was found that frequently too much of the product had been run into the containers, and that the excess was not removed from them. Hence when the covers were placed on the containers, the product oozed out from under the covers and down over the outside of the containers. The trouble was eliminated by being careful to remove any excess product by means of a sanitary scraper before putting on the covers.

193 **Wrong Type of Bottle**—Use of non-pressure ware for carbonated beverages is an extremely serious error. Occasionally the itinerant bottler in buying up junk, second-hand, or reclaimed bottles, gets a number of non-pressure ware bottles, which were once used for other liquid products on the market. But the neck finish is for the crown type of closure. Careless examination passes them as being as good as true pressure-ware bottles. This faulty judgment is based on the general configuration of the bottle.

Such non-pressure-ware bottles are not at all satisfactory, because they are not strong enough to stand the abuse, thermal shock, etc., in combination with the internal pressure of carbonated beverages and may give serious trouble in the trade.

194 **Product Spoiled by Use of Wrong Cap**—A small packer of miscellaneous products such as pickles and olives, decided to pack boned chicken. He went to considerable expense to secure production equipment. The first small test packs seemed satisfactory, so commercial production was started, and a considerable number of packages reached the market. However, spoilage began to develop to an alarming extent. Investigation showed that a screw cap with pulp and varnished paper liner was being used. These caps had to be placed on the containers before the final cooking. But the materials of these caps could not withstand the high temperature of the process, which caused them to deteriorate so that spoilage occurred.

195 **Vacuum Too Low**—Among the errors I have personally observed are the following: The packing of salmon on the Columbia River without vacuum, or exhaust, or with too little vacuum. When these cans were shipped over the Rocky Mountains, they all became springers. Also, I have seen the consistent over-packing of cans of fish by from 0.3 to over 1 oz. per can. In the course of a year, this resulted in a loss of several thousand dollars in fish given away free in the case of one large company.

196 **Threads Did Not Engage**—A complaint arose that bottles were leaking, and upon investigation it was found that the threads had been cut away in the cap by the cap manufacturer to such an extent that the full thread of the cap did not engage the full thread of the bottle. This resulted in a "cocked" condition whereby only one side of the cap was held in contact with the top of the bottle, thus permitting leakage on the other side.

197 **Bought Adhesive on Faith Alone**—A food manufacturer using large quantities of corrugated shipping cartons listened to a salesman's yarn about how packaging costs could be cut by using a lower priced adhesive.

Because of a production rush, time was not taken to test the cheaper adhesive against one which had been giving satisfactory performance and was costing considerable more than was asked for the new adhesive. Five barrels of the adhesive were purchased on pure faith and confidence in the salesman's claims and his firm's reputation.

On the gluing machine the new adhesive worked well, and containers left the plant in apparently good condition. But, after a week or more the storm broke. Complaints, many complaints, came pouring in stating that the cartons were not sealed and that packages supposed to be in the containers had either fallen out or had been stolen.

This expensive lesson taught this food manufacturer to test thoroughly all new packaging supplies and materials before changing from those which were satisfactory.

198 **Bad Machine Adjustment**—As an improvement to smooth, clean labeling production, it was considered desirable to substitute in a jar labeler, a free flowing paste for one that had a rubbery-like texture. The change was made, and the labeling machine operated smoother and cleaner. The paste manufacturer guaranteed and was confident of perfect satisfaction. But there were complaints about labels that were partly off. An investigation of the labeling machine developed that a misalignment of less than 1/64-in. in the paste roller was enough to permit a much too heavy application of paste on one part of the label and this area of paste crystallized after about one month of storage. The crystallized area came loose.

Overhauling the labeling machine remedied the unsatisfactory situation.

199 **Knives in Poor Condition**—Here is a case where there was considerable loss of time in the plant as a result of the poor condition of a sealing machine. In this plant, paper outer closures were sealed onto the containers to protect the inner closure. Sealing was accomplished by means of small wires electrically welded. Much time was lost because the knives, which automatically cut the wires to proper lengths, were not kept sufficiently sharp. By making sure before operations began that the cutting knives were in proper condition, a great deal of operating time as well as annoyance was saved.

200 **Air in Beer**—It is now a commonly accepted fact that in the brewing industry air has a deleterious effect on packaged beer or ale. In spite of this knowledge, many brewers still use air as a counter-pressure on their filling equipment, which often causes excessive quantities of air in the closed package. At the same time, most of these same breweries are daily throwing away hundreds of times as much carbon dioxide as would be required in the filling operations to replace the air. A moderate investment in closed fermenters, compressors and gas storage tanks would more than pay in the improved quality of the product.

201 **Neck Finish Didn't Match Cap**—A packer of condiments decided to improve the style of his package by using deep, double-shell caps, 24-mm. size. A supply of 24-mm. finish bottles was already on hand and the packer thought these containers could be used with the special deep caps. These new caps went on the finish in an apparently satisfactory manner. It was not discovered until later that no seal was being made on the liner in the cap. By that time, many complaints had come in from the trade of leakage of container contents. This packer should have consulted the container manufacturer, who would have told him that a special deep glass finish was required for deep caps.

These "CHINESE WALLS" *Will Choke Your Business*

State laws that build barriers to interstate trade are splitting the U.S. into 48 dis-united, isolationist fragments

By IVAN C. MILLER
Distribution Editor
Food Industries

PUBLIC RELATIONS IN THE *Food Industries*

Courtesy of Colliers—The National Weekly

SMUG have we been and not just a little bit complacent about the developments during the last 150 years of our infant nation to the most prosperous, most advanced nation on earth. We have taken for granted the fact that our people have more of the world's goods per capita than any other nation, old or young—more sanitary facilities; more household conveniences; more bigger and better instruments of education and amusement, books, schools and colleges; more radios, movies, autos; more surfaced highways and parks.

We have taken these things for granted because we are a nation endowed with great natural resources and but two international boundaries. Yes, and more, we were once the one nation on the face of the earth to have free trade throughout more than three million square miles and between many millions of people. We WERE that one nation on the earth.

With contempt did we look upon the situation abroad, where each small sovereign state is and always has been stifled within trade walls curtailing and prohibiting the free flow of trade.

In this country, unhampered free trade—over there, tariff walls around each and every boundary of each and every state—trade restricted—stifled.

No restrictions to free trade (the fountain-head of prosperity) in our country—for did not our Constitution in 1789 guarantee to each and every industry, to each and every merchant and to each and every citizen of these United States, the benefits, everlasting, of free and unrestricted trade between the sovereign states, now numbering forty-eight.

Because dealers complained that inhabitants in New York's neighboring states were carrying out of the home state good New York dollars, and many of them, New York set up a port of entry and imposed a tax or import duty on fuel coming from Connecticut and on dairy products and other farm produce coming from New Jersey. Of course New Jersey retaliated and so did Connecticut—Connecticut to the extent of boycotting New York by refusing to ship much-needed supplies into that state.

No, this did not happen in the year 1939. It happened before our Constitution was adopted. And this was just one of the many festering antagonisms between the thirteen colonies following the Revolution. These conditions gave birth to that treasured Article 1, Section 10, in our Constitution which guarantees that "No state shall lay any impost or duties on imports or exports . . ."

If the article had ended just as

EDITOR'S NOTE: *Margarine laws which constitute barriers to free trade are discussed in this article because they precede historically the great mass of such legislation.*

stated, all might have been well, but the article continued, ". . . except what may be absolutely necessary for executing its inspection laws."

A decimal point has been blamed for the collapse of a bridge. Those few words in our Constitution "except what may be absolutely necessary for executing its inspection laws," may alter the prosperity of millions, the destiny of a great nation.

Through that loophole in our Constitution we are building Chinese walls around our 48 states—impassable barriers to free trade. We are fast becoming not a nation, but 48 isolationist states.

But why? For whose benefit?

And what bearing has all this on the food manufacturer? The remainder of this article and those to follow in later issues of FOOD INDUSTRIES will attempt to point out the present significance to the food manufacturer of these existing barriers to free trade and the extent to which they may undermine the entire industry.

PROBABLY the first barriers to free trade set up by any of our states since the constitutional guarantee of 1789, were erected during the years immediately preceding 1886. During this period between 1870 and 1886, more than half of the states passed laws to curb, if not entirely prohibit, the sale of oleomargarine. These laws, many of which provided for license fees to be paid by margarine manufacturers and dealers, were passed with the stated intent of protecting the public from fraud. Apparently, however, they were designed to exclude oleomargarine from the state. This legislation was strongly sponsored and endorsed by the dairy interests—than which there are none more powerful.

According to the Department of Agriculture** not all margarine interests at that time were above fraud. Nor were other food interests. Even during the last year there have been more than a thousand seizures of food products including flour, cereal and bakery products, meat and fish, fruits and vegetable products, poultry, dairy products, etc., by the food and drug administration of the Department of Agriculture, for violations of the food and drug law.

If the real intent of these laws aimed at the control of margarine had been and were today merely to protect from fraud, misbranding or purveying of unwholesome foods, these laws and the many recently enacted margarine laws in force in over half of our states today, would not be necessary. Most food manufacturers will attest to the strictness of enforcement of the pure food and drug laws of 1906. Food manufacturers will also admit that the new Federal Food, Drug and Cosmetic Act has teeth. They expect an enforcement which will provide ample protection to the food consuming public.* Then why the special trade barrier state legislation except to protect home industries?

Although the early laws sponsored by the dairy interests were enacted ostensibly to protect the residents of the several states from fraud, the dairy interests have in recent years publicly proclaimed one of the objectives of such legislation to be the

Table I—Revenue from margarine excises and license fees, by States, for last fiscal year[1] †

State	Rate of excise per pound	Annual license fees: Manufacturers	Wholesalers	Retailers	Restaurants	Hotels	Boarding houses	Revenue from —: Excise	License	Total
	Cents	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
STATES HAVING EXCISE ON ALL MARGARINE										
Idaho[2]	5	.....	200	50	....	....	....	1,430.00	330.00	1,760.00
Iowa	5	.....	.....	....	....	....	....	315,329.90	.....	315,329.90
Okla	10	10	10	5	2	2	2	0	0	0
N. D	10	10	5	2	....	....	....	503.40	14.00	517.40
S. D	10	.....	.....	....	....	....	....	4,585.50	.....	4,585.50
Tenn.[3]	10	5	3	2	2	3	1	[6]	[6]	14,603.00
Utah[2]	5	.....	5	5	....	....	....	42,334.64	1,720.00	44,054.64
Wash	15	.....	.....	.....	.....	.....	.....	0	.....	0
Wis.[4]	15	1,000	500	25	25	25	5	[5] 13.42	[5] 1.00	14.42
STATES IMPOSING EXCISE ONLY ON CERTAIN TYPES OF MARGARINE										
Ala	10	.....	.....	....	....	....	....	0	.....	0
Ark	10	.....	.....	....	....	....	....	0	.....	0
Col	10	25	25	....	....	....	....	0	375.00	375.00
Fla	10	.....	.....	....	....	....	....	0	.....	0
Ga	10	.....	.....	....	....	....	....	0	.....	0
Kan	10	.....	.....	....	....	....	....	0	.....	0
La	12	.....	.....	....	....	....	....	[6]	.....	[6]
Me	10	.....	.....	....	....	....	....	0	.....	0
Minn	10	1	1	1	....	....	....	0	1,981.00	1,981.00
Neb.[7]	15	100	25	1	....	....	....	0	3,300.00	3,300.00
N. M	10	.....	.....	....	....	....	....	0	.....	0
N. C	10	1,000	100	....	....	....	....	2.40	2,400.00	2,402.40
S. C	10	.....	.....	....	....	....	....	[6]	.....	[6]
Tex	10	.....	.....	....	....	....	....	0	.....	2,270.40
Wy	10	.....	.....	....	....	....	....	2,274.40	.....	.....
STATES HAVING LICENSE ONLY										
Cal	....	100	50	5	2	2	2	.....	59,150.19	59,150.19
Conn	....	100	50	6	3	3	....	.....	9,700.05	9,700.05
Miss	....	.....	100	10	....	....	....	.....	[6]	[6]
Mont	....	.....	1,000	400	....	....	....	.....	9,100.00	9,100.00
Pa	....	1,000	500	100	50	50	10	.....	424,700.74	424,700.74
Vt	....	.....	25	25	....	....	....	.....	11,117.45	11,117.45

[1] Compiled August 1938 from data received from State officials. (Except for Tennessee.) Fiscal years range from calendar year 1937 to fiscal year ended July 31, 1938.

[2] Idaho and Utah each have an excise tax of 10 cents per pound on colored margarine.

[3] Data for Tennessee from p. 44, vol. V, No. 1, Tax Policy (publication of the Tax Policy League, New York).

[4] A license fee of $1 and a use tax of 6 cents per pound are charged consumers who import margarine from outside the State.

[5] Data received from Wisconsin showed a total revenue of $14.42 and indicated that 1 consumer's license had been issued. The break-down of the total has been made by the authors.

[6] Data not available.

[7] State actually collects 14¾ cents per pound as credits are given for Federal excise.

† "Barriers to Internal Trade in Farm Products", by G. R. Taylor, E. L. Burtis, F. V. Waugh, U. S. Department of Agriculture, table 1, p. 21. Washington, D. C., March 1939.

STATE TARIFF WALLS erected to protect home producers, home industries or local merchants, fail eventually of their purpose. They not only fail to protect, but boomerang because of retaliatory legislation. True, state barriers limit imports. But through the retaliatory legislation which they foster, they limit exports. Few States in the Union import more than they export.

Protective tariffs such as the margarine tax are advocated to prevent fraud and to provide tax revenue. It is an established fact that customs duties low enough to produce a sizable tax return do not protect. However, when the tax rate is high enough to protect, it produces little or no revenue. The purpose of the tax in these tables is apparent from the revenue derived.

protection of the dairy interests from the competition of other food products. According to a report of the Department of Agriculture entitled "Barriers to International Trade in Farm Products",* "generally those favoring margarine legislation have been frank to say that their object is to 'protect' the dairy industry. When the Washington State tax of 15 cents per pound was carried to the Supreme Court, the sponsors of the act candidly stated that their purpose was to help the butter industry and they made their arguments on that basis. The report of the South Dakota Tax Conference in 1931 typified the attitude in butter producing states. This report reads in part, 'The South Dakota farmers and dairymen are developing a great dairy industry which should be encouraged and protected in every legitimate way. The use of substitute dairy products, such as oleomargarine, limits the use and lowers the market of butter.

"A tax of 10 cents per pound on butter substitutes will afford a measure of protection to the dairy interests and at the same time protect the general public from the use of substitutes inferior in every way to pure South Dakota butter.

"This tax will operate to the benefit of the dairy industry in reducing the amount of substitutes used or if the sale of butter substitutes is not curtailed, will be a fair revenue producer. As between the two possibilities, we would prefer that it operate in a reduction of the use of butter substitutes.'"

But this is a private squabble between margarine manufacturers and dairy interests which does not affect other food manufacturers. Or does it?

Unfortunately, as a result of margarine taxes and other state measures which serve as tariff barriers to throttle competition, ill feeling springs up between the states whose interests are threatened and retaliatory measures are put into effect. According to the same bulletin of the Department of Agriculture,* "Expressions of resentment and threats of reprisal immediately appeared in the cotton growing states upon the passage of the Wisconsin margarine excise of 1935. According to their report.

"The Governor of Alabama and the State Commissioner of Agriculture of Louisiana issued public protests against the Wisconsin law. In its official publication, the *Mid-South Cotton News,* the Mid-South Cotton Growers Association declared, 'We are Wisconsin's best customer for butter, cheese, condensed milk, farm implements, farm light plants, plumbing supplies and road building machinery. Without our patronage she (the state of Wisconsin) would indeed be in a sad plight. She has invited such a calamity upon herself. She has chosen to wall herself in. Let her see how she likes it.'

"The Wisconsin Manufacturers Association has announced that millions of dollars of contracts for Wisconsin agricultural and manufactured products have already been cancelled by business men in sympathy with southern producers of fats and oils.

"Cotton oil is to the cotton states what butter fat is to Wisconsin and what hog lard is to corn hog states. Any interference with the free movement of cotton oil strikes at the heart of the cotton grower and the South generally—and cannot be tolerated.

Table 2A—Number of retail dealers licensed to sell uncolored margarine, by States, 1928 and 1937

STATES HAVING A SALES TAX ON ALL UNCOLORED MARGARINE

State	Excise per pound, 1937 Cents	Retail dealers 1928 Number	Retail dealers 1937 Number	Percentage, change, 1928 to 1937 Per Cent
Idaho[1]	5	699	6	−99.1
Iowa	5	7,400	3,989	−46.1
Utah[1]	5	733	286	−61.0
Total	.....	8,832	4,281	−51.5
North Dakota	10	764	.....	−100.0
South Dakota	10	1,523	48	−96.8
Tennessee	10	2,363	320	−86.5
Oklahoma[2]	10	3,498	344	−90.2
Total	.....	8,148	712	−91.3
Washington	15	3,986	11	−99.7
Wisconsin	15	5,007	3	−99.9
Total	.....	8,993	14	−99.8
Grand Total	.....	25,973	5,007	−80.7

STATES HAVING A SALES TAX ON ALL MARGARINE NOT CONTAINING A SUBSTANTIAL AMOUNT OF ANIMAL OILS

Minnesota	10	5,416	2,144	−60.4
Nebraska	14¾	3,410	2,849	−16.5
Wyoming	10	275	346	+25.8
Total	.....	9,101	5,339	−41.3

STATES HAVING A SALES TAX ON MARGARINE EXCEPT THAT MANUFACTURED FROM SPECIFIED DOMESTIC PRODUCTS SUCH AS COTTONSEED OIL, OLEO OILS, ETC.

Alabama	10	1,389	2,420	+74.2
Arkansas	10	1,432	2,163	+51.0
Colorado	10	2,362	2,315	−2.0
Florida	10	2,288	3,870	+69.1
Georgia	10	1,601	3,257	+103.4
Kansas	10	7,278	5,516	−24.2
Louisiana	12	1,602	2,691	+68.0
Maine	10	1,435	1,966	+37.0
New Mexico	10	194	539	+177.8
North Carolina	10	821	2,878	+250.5
South Carolina	10	432	1,689	+291.0
Texas	10	2,341	7,681	+228.1
Total	.....	23,175	36,985	+59.6

[1] 10 cents on colored margarine.
[2] New law held up by court action provides for tax which exempts from taxation margarine from "domestic" products.

Table 2B—Number of retail dealers licensed to sell uncolored margarine, by States, 1928 and 1937—Continued

STATES HAVING NO MARGARINE EXCISE TAXES

State	Excise per pound, 1937 Cents	1928 Number	1937 Number	Percentage change, 1928 to 1937 Per Cent
Arizona	.....	531	726	36.7
California	.....	12,236	11,353	−7.2
Connecticut	.....	899	1,313	46.1
Delaware	.....	341	401	17.6
District of Columbia	.....	443	929	109.7
Illinois	.....	15,436	16,116	4.4
Indiana	.....	10,306	9,748	−5.4
Kentucky	.....	1,954	3,789	93.9
Maryland	.....	1,958	3,271	67.1
Massachusetts	.....	4,629	4,563	−1.4
Michigan	.....	10,516	11,838	12.6
Mississippi	.....	302	626	107.3
Missouri	.....	6,986	8,451	21.0
Montana	.....	5	26	420.0
Nevada	.....	63	111	76.2
New Hampshire	.....	699	1,014	45.1
New Jersey	.....	5,817	4,769	−18.0
New York	.....	13,986	13,255	−5.2
Ohio	.....	16,298	16,677	2.3
Oregon	.....	2,530	2,493	−1.5
Pennsylvania	.....	4,177	4,078	−2.4
Rhode Island	.....	604	974	61.3
Vermont	.....	196	352	79.6
Virginia	.....	1,824	4,068	123.0
West Virginia	.....	2,094	6,233	197.7
Total	.....	114,830	127,174	10.7
Total all States	.....	173,079	174,505	0.8

Annual Report of the Commissioner of Internal Revenue, 1928, p. 113, and 1937, p. 122.

"The head of a grocery product distributing company in Georgia declared that Wisconsin products such as beer, paper, plumbing supplies, cheese and evaporated milk had been hurt in Southern markets. The secretary of the Mississippi Wholesale Grocers Association reported plans for reprisal in that state.

"EVEN labor added its voice to the protest. At the convention held in June, 1938, the Tennessee Federation of Labor protested against margarine taxation, adopting a resolution which reads in part: 'Whereas, oleomargarine conforms to all the requirements of the federal and state pure food laws and is sold purely on its own merits as an article of food, and whereas oleomargarine is used primarily by labor, its families and low income consumers because of its price, economy and adaptability as a table and cooking fat in the house, be it resolved by the Tennessee Federation of Labor in convention assembled, that it is opposed to the taxation of this wholesome, nutritious and pure food product by federal and state governments, because such taxation harms both the low income consumers and the domestic producers of oils and fats; and because there is no social or economic necessity or sound reason for subjecting any food product that conforms to the federal and state pure food laws to additional special

and restrictive taxes or license fees or other harmful impositions.'

"In March, 1938, the Arkansas General Assembly in concurrent resolutions protested against 'protective tax laws against the importation, sale and consumption in their several states of certain wholesome food products from other states under the guise of protecting their own producers of competing products.'

"The actual extent to which the sale of Wisconsin products in the South was curtailed cannot be determined. At the time the passage of the act was being considered, a Senator from an important manufacturing district in Wisconsin declared that Southern states were already beginning to boycott Wisconsin machinery and canned milk. Soon after the act was adopted the Wisconsin Manufacturers Association (strongly opposed to the bill) reported threatened losses in sales of $1,000,000 to Wisconsin paper manufacturers and of $2,500,000 to Milwaukee manufacturers of textiles and machinery. One margarine manufacturer was reported to have cancelled his purchases of paper cartons from a firm in Wisconsin. These were said to have amounted to $350,000 per year."

The reprisals from retaliatory legislation may and do affect many industries, stifling competition—slowing down the free flow of trade. The Wisconsin dairy interests protect themselves from the competition within the state of margarine and similar products but lose in retaliating states a portion of their sales of canned milk and cheese as well as other dairy products.

THE trade barrier against margarine set up through the influence of the dairy interests does not affect only the manufacturers of margarine and milk products. It does not affect only the products of the states embroiled. Such laws affect other industries, other states. Evidence indicates that in times of depression such as we have had since 1929 in the states which have high tariffs on margarine, many of the families in the lower income groups are forced to forego the use of margarine, turning not to butter but to lard, peanut oil, etc., as substitutes. Forced to give up a spread, many of these families abandon bread and turn to pancakes and "johnny cakes." So the baker is caught in a net set to catch other fish. The effect of trade barrier legislation and the resultant retaliatory legislation are farflung indeed.

The state laws limiting the sale of margarine are but a few among hundreds of laws that function as trade barriers to the free flow of merchandise throughout our country. Most of these laws have been born in the last few years. They are like the dragon's teeth—when sown, each gives rise to an army of retaliatory laws, each new crop more vicious than the ones before. It is regrettable that the first sowing of these laws, and a large portion of the harvest which has followed, has been the result of the efforts of the food interests, the producers, the manufacturers and the distributors of foods. (Specific cases will be discussed in the following issues of FOOD INDUSTRIES).

The food interests have produced a Frankenstein's monster. The lack of good public relations throughout the food producing, manufacturing and distributing groups has permitted a situation that threatens the destruction of business as we know it under the capitalistic system—foreshadowing the end of free initiative, free enterprise.

And how can the lack of good public relations be blamed? Many groups throughout the business world hold the steadfast conviction that the acme of good public relations is to get favorable legislation enacted. Actually the greatest public relations blunder which can be committed in the name of business—free enterprise or the capitalistic system—is to run to the government, state or federal, begging for more and more government throttling of free trade.

It is a sign of softness—disintegration—when industry after industry begs for protection from competition (truly called the life blood of trade), inviting government supervision and control.

The end of the protection road paved with state trade barriers can only be some form of collectivism following the death of that system which was one of the things that made us in such a short span of time the world's most prosperous nation. Good public relations, and good public relations alone can check the trend to self-destruction and can regain at least a portion of the lost ground.

Table 3A—Percentage of retail stores licensed to sell uncolored margarine, by States, 1929 and 1935, which had an excise tax on margarine in 1935[1]

State	Percentage of retail stores	
	1929 Per Cent	1935 Per Cent
Iowa	[1] 113.8	51.5
Washington	[1] 112.6	0
South Dakota	94.3	3.3
Idaho	74.9	.5
Wisconsin	63.6	.2
Utah	63.2	14.1
North Dakota	61.7	.1
Oklahoma	50.8	2.8
Tennessee	24.5	4.3

[1] Source of data used in computing percentages on number of food stores is the total number of grocery stores, combination stores (meat and grocery), and general stores (with food) as reported for 1929 in the Fifteenth Census of the U. S., 1930, Retail Distribution, vol. 1, pts. 2 and 3, table I for States, and for 1935 in Census of Business, 1935 Retail Distribution, vol. III, table IA.

Number of retail dealers licensed to sell uncolored margarine taken from the Annual Reports of the Commissioner of Internal Revenue, for 1929, table 12, p. 100; and for 1935, table 34, p. 129.

Two inadequacies in these data should be borne in mind. (1) The accuracy and completeness of the count of food stores probably varied somewhat both from State to State and from one census to the other. (2) We have included as food stores only the categories indicated, but to some extent other types of dealers may have sold margarine. It will be noted that two States have percentages higher than 100 in 1929. This would appear to be due either to the fact that not all retail dealers were counted in the 1929 census, or that, if counted, they appear in categories other than those that we have included.

Table 3B—Percentage of retail stores licensed to sell uncolored margarine, by States, 1929 and 1935[1]

State	1929 Percentage of retail stores Per Cent	1935 Percentage of retail retail Per Cent
Oregon	99.4	63.3
Nebraska	96.6	72.0
Indiana	93.2	80.8
California	92.0	56.2
Ohio	84.2	75.9
Michigan	83.8	71.7
Illinois	79.1	68.8
Colorado	75.8	70.3
Minnesota	75.7	31.1
Kansas	72.2	87.1
District of Columbia	69.7	53.3
Missouri	62.2	53.3
Wyoming	58.3	44.4
Arizona	45.7	52.8
Maine	43.4	45.1
New York	41.1	35.2
West Virginia	38.7	50.9
New Jersey	38.2	40.6
Massachusetts	34.1	33.7
Florida	32.2	47.5
New Hampshire	31.6	42.2
Delaware	31.2	38.8
Maryland	30.6	43.6
Rhode Island	30.4	40.9
Nevada	29.6	27.1
Vermont	22.5	19.7
Arkansas	21.5	17.8
Virginia	20.8	29.7
Louisiana	17.1	20.4
Kentucky	17.0	24.2
Connecticut	15.6	21.3
Alabama	15.4	21.1
New Mexico	14.8	24.2
Texas	14.5	28.3
North Carolina	13.8	20.6
Georgia	12.9	20.8
Pennsylvania [2]	12.2	11.1
South Carolina	11.2	21.6
Mississippi	4.2	6.7
Montana [2]	0.8	1.0

[2] High license fees.

References

* "Barriers to Internal Trade in Farm Products", a special report to the Secretary of Agriculture, by the Bureau of Agricultural Economics, United States Department of Agriculture, issued by the Government Printing Office, March, 1939.

** The U. S. Department of Agriculture states that an examination of its records of violations of the Federal Food and Drug Act (1906) indicates that, though early margarine legislation may have been enacted as a protective measure against fraud, the obvious objective of recent legislation establishing high margarine sales taxes and license fees is not protection from fraud. According to the Department, "the practice of passing off margarine as butter has practically disappeared in recent years."

New Packages & Products

THE intent of food manufacturers who have made package changes during the last year was discussed in the last issue of FOOD INDUSTRIES (June 1939, p. 336). It was pointed out at that time that the results obtained from a questionnaire to food manufacturers indicated that none of the recent package changes were made with the single objective of reducing the cost of the package. Less than 10 per cent of the package changes were made primarily to provide greater protection to the products they contain.

More than 90 per cent of the package changes were made primarily to increase sales appeal. In selecting a package with more sales appeal some manufacturers also effected an economy and some afforded better protection and shelf-life for their products.

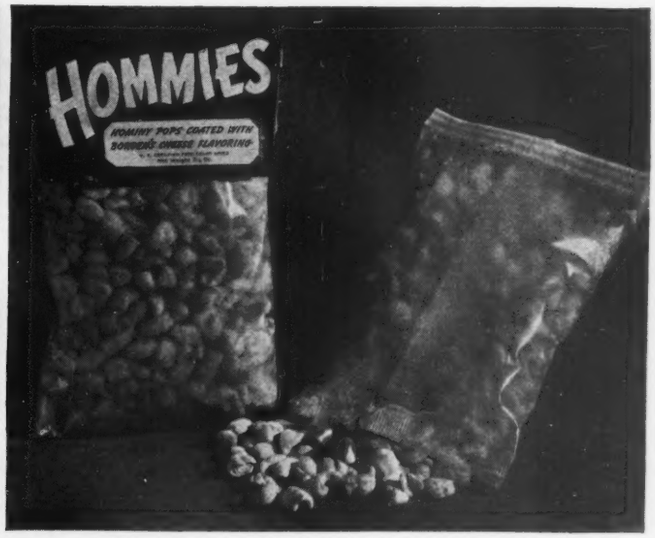
Modernization was the keynote of those attempting to obtain greater sales appeal for their packages. All considered modernization necessary for sales appeal. More than half modernized the label. Visibility was considered an important means of modernizing the package. More than three-fourths of the package changes accomplished a greater degree of visibility either for the product or the package itself.

Improved color combinations were considered vital. Eighty-seven per cent of the packages designed to improve display value attempted to accomplish greater eye appeal through a more effective use of color or through the use of more striking color combinations.

Convenience to the consumer was apparently considered of minor importance. Slightly less than a fourth of the replies indicated any attempt to make the package more convenient for the user. A still smaller percentage chose a re-use container as a means of increasing sales appeal.

Though the new Federal Food & Drug Act enforcement date has been pending throughout most of the time these new packages have been introduced, less than 10 per cent of the new packages were adopted in order to comply with the requirements of the act. Only one manufacturer redesigned a package to place a product on the market as a health food.

Not all those who returned questionnaires answered the question indicating whether the new package was designed to increase sales in self-service stores. Of those who did answer this question (more than half) 70 per cent indicated that the package was designed to increase impulse sales in supermarkets and in self-service stores.



Economy Family With Eye Appeal

GEORGE WESTON, LTD., Passaic, N. J., effects an economy in packaging by using the same folding carton for a variety of cookies and crackers. Because the same carton is used, the same production equipment can be used without changing. This is possible even though the wrappers produce packages which, on the retailers' shelves, are displayed on end or resting on a side. The wrappers themselves are designed for economy. The same basic colors are used—therefore many different wrappers can be run off by the same press without changing ink. This permits carload purchase of labels without carrying a carload of labels of any one item on hand.

Sales Appeal for Whole Family

THE REDESIGNED CARTONS for the bakery products of Drake Bakeries, Brooklyn, produce sales appeal through more appealing color combinations. These modernized packages are less ornate than the former packages; each package permits visible inspection of the product and places emphasis on the display value of the product itself. These packages illustrate a trend toward effective eye appeal through the use of effective color combinations and simplicity of design.

Two Packages, Two Objectives

TWO NEW PACKAGES of the Borden Company, New York, accomplish different objectives. The new package for "Borden's Crisps," chocolate coated malted milk centers, increases sales appeal through attractive color combinations and by permitting inspection of the product through a transparent window. The new package also reduces transportation costs, thereby introducing an economy. The new package for "Hommies" cheese flavored hominy pops, not only permits inspection of the product, but protects the product during shelf-life. The heat-sealed, double-walled glassine bag keeps the product fresher by delaying rancidity, keeping out moisture and air, and thereby increasing the shelf-life of the product.

For Consumer and Retailer Convenience

ORIGINALLY Shefford's 2-lb. loaf cheese was packaged in a wooden box. Shefford Cheese Co., Green Bay, Wis. has recently adopted a fiber carton for the 2-lb. loaf and a fiber shipping case. The new container has several advantages. It has more eye appeal and is more easily opened whether by retailer or consumer. The new containers are shipped in master shipping cartons rather than by the old method of strapping. These, too, are more easily handled by the retailer. The fiber carton is cleaner, neater, more easily stored and more easily handled. It extends an invitation to the consumer to buy cheese in units larger than the conventional ½-lb. package.

Food DISTRIBUTION

Merchandising Hints

Let's Have More of This

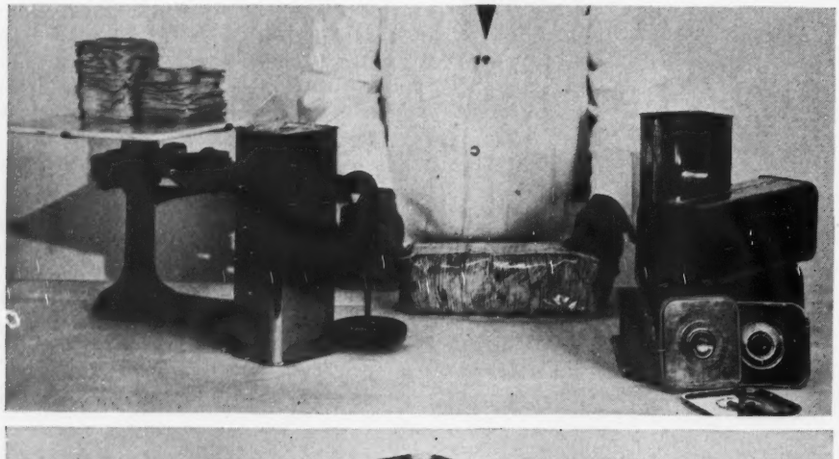
WE HAVE LEARNED that a new campaign has been launched in California through Chambers of Commerce and service organizations of many California communities. Members pledge to drink orange juice and grapefruit juice. In addition, many are giving away orange juice to tourists free of charge. We think this is an excellent idea. We hope that the meat packer, the baker, and many other food manufacturers including the brewers, will consider this idea especially here in the East. Oh boy, will we go on a protracted tour!

Aged Cheese in Convenient Form

A NEW METHOD of curing and packaging cheese developed by the Bureau of Dairy Industry, United States Department of Agriculture, was discussed in the May, 1938, issue of FOOD INDUSTRIES, p. 279. The Bureau's efforts are bearing fruit. Aged cheddar, Swiss and other cheeses are appearing on the market in package sizes from 8 oz. to 5 lb. Ready-sliced cheese, sandwich size, in 5 lb. cans, is meeting popularity with institutions, where prepared meals are served. Although the cost of the sliced cheese is somewhat higher than the cost of the same cheese in dairies, drugstores, lunch counters, "dog wagons," and roadside stands, where the sandwich is a demand item, are turning to the sliced cheese in 5 lb. cans in preference to other cheeses. The loss from staling is less and the convenience angle in handling saves time and money.

You Would, Too

A NEW CONFECTION is plowing a deep furrow through a new market. This candy has everything. It is sweetened with dextrose, "the energy sugar," "for sustained health." The confection is fully fortified with yeast, cod liver oil, dicalcium phosphate and other "bone-building ingredients." And vitamins—to be sure, A, B, D and G. By now you are fairly drooling—well, don't. This dainty morsel is not for you. It's for Rover! He's reported to howl for it. Wouldn't you?



Big Slice for Food Industries

FOOD MANUFACTURERS may not approve of the $1,205,452,000 spent since 1933 for wages alone on PWA projects. Aside from the workers, however, the food manufacturers are the chief beneficiaries. The accompanying table indicates that PWA workers spent more for food, in fact twice as much for food, as for any other item in their cost of living. PWA workers have spent $388,000,000 for food. In spite of this fact we still have surpluses and are rapidly accumulating more.

Expenses of families of workers on PWA construction*

Item	*Dollar*	*Per Cent*
Total	$1,205,452,000	100
Food	388,156,000	32
Clothing	130,189,000	11
Housing	191,667,000	16
Household operation	138,627,000	12
Furnishings and equipment	53,040,000	4
Transportation	109,696,000	9
Recreation	65,094,000	5
Medical care	50,629,000	4
Other items	78,354,000	7

* Release No. 3574, Federal Emergency Administration of Public Works, May 31, 1939, P. W. 89858, p. 2.

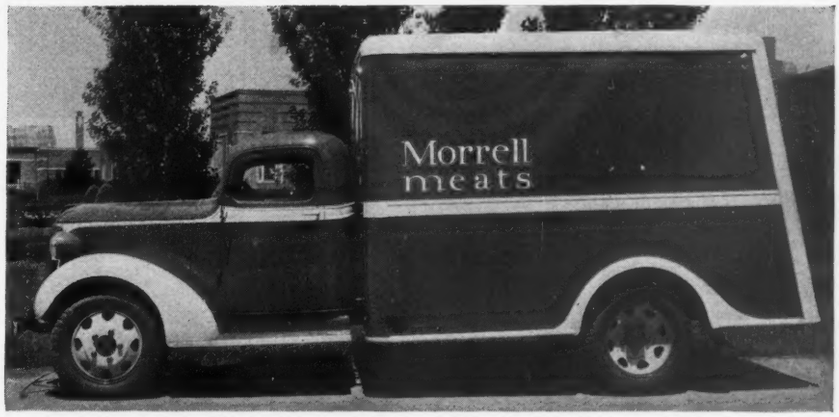
Time for Christmas Shopping

ACROSS the editor's desk comes a brochure from a paper house suggesting Christmas wrappings and Christmas packages. Which reminds the editor that, though Christmas shopping is a long way off for him (thank goodness), Christmas shopping is in order for the food manufacturers who feature their products in special wrappings or containers for the holiday sales.

Food DISTRIBUTION

Ways to Make Motor Vehicles
Better Your Public Relations

HOW to make the most of the public relations possibilities of their motor vehicles is one of the current problems of food manufacturers. Methods employed in meeting this problem are presented by executives of leading food companies in the following paragraphs.



New truck design developed to improve the public relations value of a meat delivery truck. See accompanying item for details.

Develops New Design

Colors, layout and lettering, color combinations, degree of cleanliness and state of repair—all these have an important bearing on the impression made upon the public when the business firm's trucks are seen on the street. And since people unconsciously associate characteristics of the company's property with the characteristics of the firm itself, a creditable and attractive color job has its place in the general public relations picture.

We have developed a new color and design for our trucks, and have in mind swinging toward this design as we order new equipment or repaint vehicles which we are now operating. One truck on which this color combination has been worked out is shown in an accompanying illustration. This particular truck does not lend itself easily to artistic treatment, but when seen on the street the total effect is good and conveys an idea of purity and sanitation. The main body color is ultra-marine blue, and the lettering and second color are in cream. The engine hood is purposely blue to minimize reflection in the driver's eyes, for the sake of safety. The fenders are cream so that they stand out boldly and thus minimize the chance of being bumped in traffic, as well as increasing the visibility of the truck from the standpoint of pedestrians.

The placement of the words "Morrell Meats" well forward on the side panels of the truck is done with an idea of balance. The bead line on the truck illustrated is not in strict adherence to the style we would like to follow, and we propose to make this convey a more tapering effect whenever this treatment is possible in future truck painting jobs.

We naturally place importance upon the appearance of the driver, just as we recognize the importance of a clean looking truck. Our drivers wear white coats, such as are standard around packing houses.—GEORGE A. MORRELL, *John Morrell & Co., Ottumwa, Iowa.*

Prefers Plain Design

We have always insisted that our cars be kept clean, and that badly dented fenders and bodies be reconditioned as quickly as possible.

We used to place on our panel cars a number of reproductions of our packages. In the course of time we gave this up, and for a number of years we have used nothing but plain gold lettering. At present that is limited to the company's name and the number of the vehicle, on the car door. We also decided not to have cars painted special colors, but to use on our panel equipment a dark blue paint, which is standard with practically all manufacturers, and on the passenger vehicles either the dark blue or black. The dark colors show up what lettering we place on the cars to better advantage than lighter shades.

Using stock colors we can always obtain a car promptly, and there is a minimum of upkeep. Cars painted light colors require constant attention to keep them presentable, and this adds considerably to the cost of upkeep. Furthermore, delivery cars are now so common that there apparently is not much novelty in any kind of color combination.

The men driving our sales fleet are salesmen. They are of a high caliber, take an interest in keeping the equipment presentable and appreciate the need for courtesy and reciprocity on the road. Drivers should be dressed neatly and in clean clothing at all times, regardless of whether it is a uniform or not.

Some years ago a survey was made in California among club women to find out what women noticed or preferred as far as delivery wagons were concerned. A copy of the principal part of it follows:

What Women Like About Delivery Cars

A quiet, refined, elegant appearance.
Subdued colors, such as greens, grays, maroons.
As few colors and as little lettering as possible.
Just the name and telephone number, nothing else.
Simple, uniform lettering, clear and distinct.
Graceful, rounded body lines.
The word characterizing the service lettered in size equal to the name of the company.
Subordination of all lettering relative to auxiliary service so that readers will not confuse the auxiliary with the principal service.

What They Don't Like

Wild riot of colors.
Big, noisy lettering.
Different kinds of lettering on the same truck.
Use of the national emblem in any form.
National advertising campaign posters.
Visors on the front of the car carrying the name.
Long, square overhang on the body.
Soiled bundles anywhere on the outside of the car.
White cars, unless kept scrupulously clean and painted so often that the paint never shows the faintest trace of dinginess.

I personally believe that commercial work requires the darker colors, with stock bodies wherever possible, plain lettering, and not too much of that.—C. L. JONES, *Automobile Division, General Foods Corp., New York, N. Y.*

Trucks Used To Acquaint People With Products

Vehicles painted same color as packages and decorated with pictures of containers

EFFECTIVE advertising and product promotion can be obtained through a tie-up between products and the trucks which deliver them. This is the experience of Worcester Salt Co., New York. Worcester paints its vehicles in the color used on the packages of its products. In addition, the packages of the most important items in its line are reproduced on the side or rear panels of the vehicles.

Just how this tie-up has been accomplished is shown in detail in accompanying illustrations. However, because they are lacking in color, these pictures do not do justice to the striking contrast between the three colors used—a bright, vivid Persian orange and black and white. The effect of this color combination must be seen to be appreciated fully.

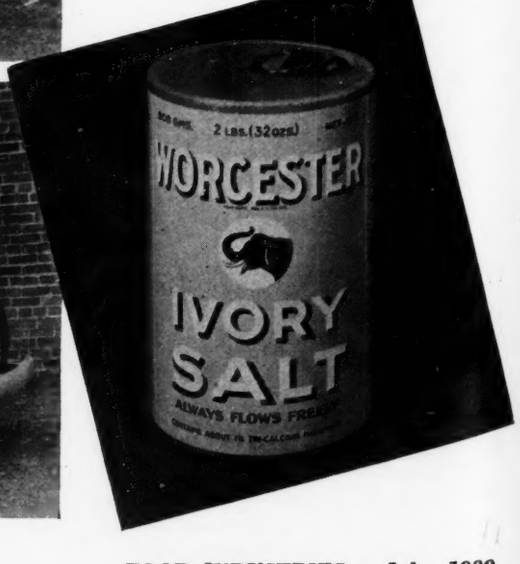
The Persian orange has always been the basic color of the Worcester Salt Co.'s packages. But it was not until last year, when a new automotive fleet was put into service, that this same color was tied up with the various units of the fleet and supplemented by hand painted reproductions of the packages.

Of the two types of trucks illustrated, the larger, the 5-ton Mack, is used to deliver heavy loads from the company's New York City warehouse to jobbers and to large salt users such as hotels, restaurant chains and the like in the metropolitan area. The smaller truck, a 1939 Dodge ½-ton panel delivery model, is used by Worcester's direct-selling force, which sells for cash in certain territories and obtains its goods from wholesale warehouses or jobbers within the territory being covered.

On each type of vehicle, the basic color is the Persian orange. In the case of the Macks, the cab, upper body panel and wheels are painted orange. The lower body panel and fenders are painted a glossy black. On the Dodges, the entire body is painted orange except the lower rear door panel. Black is also used on the rear fenders, the front fenders and the "splasher" between the front fenders and the radiator shell.

In the way of lettering and advertising, the Macks carry a large reproduction of one of the 2-lb. cartons of salt on each side of the body. On the right side it is a carton of Ivory salt and on the left, of Iodized salt.

The color of these two cartons is



Persian orange — a bright, vivid color—and white lettering with a black outline is the color combination of both the truck and the package of salt tooth paste. And the same color scheme is also used on the packages of table and other salts which comprise the line of the Worcester Salt Co. Packages of all three products are reproduced on the truck body shown. To assist in a sales campaign on the salt tooth paste, the entire lower rear panel is given over to that product.

the same Persian orange as is used on the upper panel of the body. As such it offers no contrast between the carton itself and the body panel except for a narrow black outline around the carton. However, contrast is obtained by carrying the lower half of the carton at an angle into the black lower body panel.

Because there is no black panel on the sides of the smaller Dodges, the company packages reproduced are carried within black circles, these being outlined in white against the Persian orange background to provide excellent contrast. There are four of these circles in all, one on the front of each upper side panel and one on each lower door panel. The two upper-panel circles show rectangular packages, one of Free Running salt and the other of Fre-Flo salt. The lower door panels show cylindrical cartons of Ivory and Iodized salt.

To assist in advertising a current sales campaign on Worcester salt tooth paste, the lower rear door panels are painted black and show a large tube of the tooth paste in its orange color with white lettering outlined in black. An advertising slogan is also painted on the rear panel, this being in white lettering so as not to interfere with the license plate and stop light.

Always a significant factor in truck-fleet management is the location of the points of origin of the product. Worcester's plant is at Silver Springs, N. Y., about 40 miles southeast of Buffalo. So the Worcester company faces the age-old problem of obtaining low transportation cost to centers of consumption. This problem is of great importance because of the relatively low cost of salt per pound. For example, on 100 lb. of salt selling for 70 cents in New York City, the cost of transportation to New York is 22 cents. To more distant points, the ratio of transportation cost to selling cost is even greater. For these reasons, salt has to be shipped in the largest possible quantities and at the lowest possible rates. Since the large consuming centers are usually joined by railroad or can be reached by water, most salt is shipped by rail or water or a combination of both.

Accordingly, the motor truck, one of whose main advantages is its speed of delivery, has not been employed to any great extent in the primary movement of salt. The company ships its salt in 45,000-lb. carload lots to wholesalers or jobbers, who in turn use trucks for the retail distribution to consumer outlets. Shipments to all states east of the Mississippi go by rail. Those to the West Coast go by rail to New York and then by water to the destination. In the New York area, Worcester uses the Mack trucks illustrated and fifteen new Dodges for direct selling as an aid to distributors in New York State, northern New Jersey and Connecticut.

The company is proud of the selling tie-up between these vehicles and its products. However, this policy is not followed with respect to the passenger cars of salesmen contacting jobbers. These cars have no distinguishing Worcester markings, as that would tip off the salesmen of competitors when certain areas were being actively worked for business.

At (top) one of two new 5-ton cab-over-engine Macks used by Worcester Salt Co. to make heavy deliveries of its salts in barrels, bags and cartons to jobbers and large retail outlets in New York City. The truck cab, upper body panel and wheels are painted Persian orange and the lower body panel, black. These same colors are used on the large carton handpainted on the body. (The carton in the inset is a slightly modified design.) Below, is shown the right side of the new Dodge direct-sale panel delivery truck seen from the left side and rear at top of this page. The packages are framed in black circles outlined in white on the Persian orange background. Lettering and packages are hand painted.

Food Technology

NEW DISCOVERIES & INVENTIONS

FOOD TECHNOLOGY

How to Measure Moisture in Powders Electrically

THE DIELECTRIC CONSTANT of dry substances—biscuits, flour, sugar, starch, etc.—varies between 8-10, while that of water approximates 80. Therefore, slight changes in the moisture content are readily indicated by deviations of the dielectric constant from a curve calibrated for each specific substance. Colloids, temperature, compression and particle size affect the accuracy of this method.

Formulas are presented by means of which satisfactory results are obtained regardless of compression and particle size, particularly in the determination of the moisture content in biscuits.

Digest from "The Use of Dielectric Measurements to Determine the Moisture Content of Powdery Substances," by V. B. Yerstignejen. *Cereal Chemistry* 16, 336, 1939.

English Bottle Washing Problems

INDUSTRIAL WASHING of refillable beverage bottles faces many problems, both mechanical and chemical. Beer and cider bottles must be thoroughly free from wild yeasts and molds, and no trace of dregs may be allowed to remain. Milk bottles must be freed of dried fat without precipitating the casein which is difficult to remove.

Among detergents, caustic soda is useful but has two serious drawbacks: it is poor in wetting power, and very difficult to rinse away from glass. Washing soda is slow to effect deflocculation and emulsification and does not rank high in wetting power, but is easier to rinse than is caustic soda. These demerits explain the need for sodium silicate, sodium phosphate and similar washing agents.

A special problem in dairies is yellow spot, an infection occurring in milk bottles. Apparently no one organism can cause it, since it seems to be a symbiotic growth of two bacteria, one a coccus (perhaps a streptococcus) and the other a bacillus. The depth of the yellow color varies with the prominence of the bacillus in this symbiotic relation. For such infections it is better to wash the organisms off the glass and kill them in the wash water than to kill them while in contact with the glass. Hence the need for effective detergents, and for efficient mechanical action in machines for industrial washing of bottles.

Digest from "Industrial Washing of Glass Containers." by P. D. Liddiard, *Chemistry and Industry* 58, 72, 1939 (Published in England).

Errors of Testing Salt Brine

ERRORS, as high as 50 per cent, can be made by the salometer when testing brines containing very little salt, such as those used on genuine dill pickles. When the amount of salt actually present, determined by the silver nitrate titration, is compared with the amount indicated by the salometer reading, the errors caused by soluble substances other than salt are apparent. In strong brines those errors are of less importance than in weak brines.

An improved indicator for the titration is dichlorofluorescin which gives a sharper end point than potassium dichromate.

Digest from talk by D. E. Richardson and R. G. Switzer, Mich. State College, Technical School for Pickle and Kraut Packers, Feb., 1939.

BAKING & MILLING

Bleaching Flour

AS AN IMPROVEMENT in peroxide bleaching of flour, German Patent 670,555 (granted Jan. 20, 1939, to Jan Straub, Santpoort, Bloemendaal, Netherlands) discloses the use of an organic peroxide melt containing a mixture of peroxides derived from aromatic acids. The mixture is so proportioned from selected ingredients that it is insoluble in water, and remains liquid at the bleaching temperature, which should be below 45 deg. C. A small amount of any inert substance which will help to keep the peroxide mixture in the liquid state may be added. As an example, 1 part di-o-toluyl peroxide is mixed with 1 part di-m-toluyl peroxide and 2 parts hydrocinnamyl peroxide and the resulting mixture is used as a melt in bleaching flour.

Limits to Potato Flour in Bread

A COMPARATIVE STUDY of the effects of potato flour and potato starch on the baking quality of flour showed that both are useful if properly employed. Tests were made with from 3 to 40 per cent of potato flour or starch, and with 3 to 40 per cent of mixture (50:50) of both. Potato flour is beneficial only up to a certain proportion and no more than 8-10 per cent should ever be used. It serves to improve dough yield and mitigates the toughness of dough from some flours, but if more than 4 per cent is added it tends to hamper loaf formation and make the crumb more friable. In general, about 4 per cent potato starch in wheat flour, or a blend of 3 per cent potato flour and 3 per cent potato starch in rye flour, will improve baking quality. Larger quantities are definitely undesirable.

Digest from "Influence of Added Potato Products on Baking Quality of Wheat Flours," by Karl Trognitz, *Zeitschrift des gesamten Getreide-, Mühlenund Bäckereiwesen* 26, 14, 1939 (Published in Germany).

Experts Define Fermentation Tolerance

A NUMBER of cereal chemists, bakers and bakery engineers were asked to define the term *fermentation tolerance.* From their replies, which were largely in agreement, fermentation tolerance is that range in fermentation time within which the forces of gas production are in balance with the forces of gas retention. Within this time-range, good baked products are obtained. Cut the fermentation time too short, or let it run too long, and the bread or other product is inferior.

If the baker is so expert that he can regulate gas production and gas retention so that their peaks come at the same time, he gets maximum

volume with the best grain, texture and other properties to be had from the flour he is using. If he either lacks or neglects this skill, he must expect inferior products. Some flours will give a wide range of fermentation tolerance if handled in one way, whereas, with some other treatment, the same flour may have a very narrow tolerance.

Some experts consider the sugar level, or in bakers' language the gassing power, to be the one factor controlling fermentation tolerance. Others believe that the amount of gluten and its physical properties are quite as influential as the gassing power. Colloidal elasticity of the dough is an important factor in gas retention. And to the extent to which this elasticity depends on the composition of the flour, the fermentation tolerance will be affected.

Digest from "Meaning of Fermentation Tolerance," by Rowland J. Clark, *Cereal Chemistry* 15, 342, 1938.

CANNING & PRESERVING

How to Prevent Cracking of Maraschino Cherries

THE USUAL BRINING PROCEDURE employed on the Coast consists of filling 50 gal. paraffin-lined fir barrels with 240 to 250 lb. of fresh cherries which are covered with a brine solution containing 1.5 per cent sulphur dioxide and 0.9 per cent calcium carbonate or calcium hydroxide to firm and bleach the cherries to a light straw color. After standing for four to six weeks with some agitation, the cherries are shipped.

Besides natural surface blemishes, so-called "solution checks" caused by unsuitable brine solutions are among the most common defects in brined cherry packs. Cracking, however, can be practically eliminated by selecting the proper acid-alkali ratio in the brine expressed in terms of pH. The pH value, as well as the type of alkali used, are important factors in preventing cracking in cherries.

Cruess (1935) reported the critical pH value of the brine at which least cracking occurs to be between pH 2.25 and 3.0, regardless of type of alkali used to adjust pH. The authors, however, contend that improved packs result with a pH of 1.94 when calcium (commercial whiting or hydrated lime) is used, or with slightly higher pH values when 50 per cent sodium hydroxide (pH 2.07) or 50 per cent potassium hydroxide (pH 2.13) are employed in the brine. The greater number of uncracked cherries in the solution containing whiting is probably due to the influence of small amounts of carbon dioxide remaining in the brine.

Royal Anne cherries cracked least at pH 1.95. For Black Republican and Bing cherries solutions with a lower pH (1.83) were found more suitable

Digest from "Investigations of the Cracking Problem in Brining of Sweet Cherries," by E. H. Wiegand, C. E. Norton and D. J. Pentzer. *Food Research*, 4, 93, 1939.

Crystalline Fruit Juice Mixtures

UTILIZATION of the low solubility property of dextrose hydrate in the making of crystalline fruit juice mixtures constitutes the invention in U. S. Patent No. 2,147,238.

Supersaturation is brought about either by dissolving a high ratio of the dextrose in the juice, letting the heated solution cool and seeding with dextrose crystals; or by using a lower ratio of the dextrose and concentrating under reduced pressure. Seeding may or may not be necessary to start the crystallization depending upon the concentration of the sugar in the cooled solution.

A preserved fruit juice with natural flavor of the fruit and resulting economies are the claimed benefits. The method is applicable to orange, lime, lemon, prune or berry juice and also to whole, mashed or ground fruit intended for use in beverages, gelatine desserts, sherbets, ices, ice cream, and the like.

Patent was granted to Thomas Alvin Bruce, San Mateo, Calif., and assigned to Corn Products Refining Co., New York, N. Y.

Italy Does Not Like England's New Copper Restrictions

THE COPPER CONTENT in 66 samples of canned tomatoes from various parts of Italy ranged from 24.24 to 445.86 p.p.m. In fresh tomatoes the range was from 16.82 to 51.61 p.p.m. but probably the higher values indicate copper retained from fungicides, not the true natural copper content. Contamination in canned tomatoes depends mainly on the extent and severity of exposure to copper or copper alloy apparatus. Wherever possible the contact of liquid-and-air interfaces with bare metal should be avoided, for example by keeping pipe lines filled with liquid, in order to minimize corrosion and consequent entry of dissolved copper into the canned products.

To some extent aluminum, cast iron, enameled iron and rubber linings can be used instead of copper or its alloys, but experience dictates use of copper in certain parts of the apparatus for best quality of product. Determinations of copper in tomatoes from several canneries, using different apparatus materials, have been compared to ascertain how copper content can be minimized. Beginning in 1940, exporters to England must meet a new low limit for copper, namely 50 p.p.m. Since no untoward effects are reported from the common occurrence of much higher copper content, Italian exporters of canned tomatoes consider this limit to be unnecessary and unreasonable.

Digest from "Copper in Canned Tomatoes," by Aldo Piegai, *L. 'Industria Italiana delle Conserve* 14, 27, 1939 (Published in Italy).

CONFECTIONERY

Banana Confection

A NOVEL CONFECTION is made from bananas, according to British Patent 496,936 (granted March 8, 1939, to A. Cigarini), by coating thoroughly fresh peeled bananas with chocolate, sugar or glucose. The pores of the fruit may first be sealed by coating with gelatin, albumen or gum arabic, with or without a small amount of an astringent or any permissible preservative. If preferred, the order of these coatings may be reversed. A spray or dip method may be employed, the fruit being held by a wire clip having thin pointed prongs. A tinfoil or cellulosic foil wrapper may be used. The treated bananas are stable indefinitely at low temperatures, and can be kept several days in household refrigerators.

DAIRY PRODUCTS

Refrigeration Requirement of Cold Storage Butter

TO PROVIDE A BASIS for calculating the refrigeration requirement for butter under given temperature conditions, precise measurements of specific heat were made, as a function of temperature. Because butter is a mixture, and its components do not have the same specific heats, separate determinations were made for fresh butter and butter fat without water (dried at 110 deg. C.). Comparison of the results with the known specific heats of water in the same temperature range showed that the specific heat of fresh dairy butter is the sum of the specific heats of butter fat and water in the mixture.

In making the measurements, supercooling of the water droplets was avoided by chilling the butter to "dry

(*Turn to page 418*)

The Food Industry News

Manufacturers Get Delay On Label Requirements

After long delay which kept food manufacturers in a state of uncertainty as to future labeling requirements, the Senate and House conference committee on June 13 compromised upon the Lea Bill. Congress concurred and the President signed the bill on June 23.

This measure (H.R. 5762) extends the coal-tar color and most of the labeling provisions of the Federal Food, Drug and Cosmetic Act to Jan. 1, 1940. And further extension is provided to July 1, 1940, at the discretion of the Secretary of Agriculture. The latter extension applies to individual manufacturers who can prove that they stand to suffer burdensome financial loss from unused lithographed labels or containers with lithographed, fused or other permanent labeling, manufactured prior to Feb. 1, 1939.

Included among the labeling provisions postponed are the declaration of (1) the name of the packer or distributor; (2) the standard name of the product or, if it has a trade name, the name and proportion of each ingredient; (3) artificial flavoring or coloring; (4) substandard quality or fill of container; (5) vitamin and mineral content in case of a special dietary food.

The postponement to Jan. 1 pertains to sections 402 (c); 403 (e) (1); 403 (g), (h), (i), (j) and (k); 501 (a) (4); 502 (b), (d), (e), (f), (g) and (h); 601 (e); and 602 (b). The further extension to July 1 applies to sections 403 (e) (1); 403 (g), (h), (i), (j) and (k); 502 (b), (d), (e), (f), (g) and (h); and 602 (b).

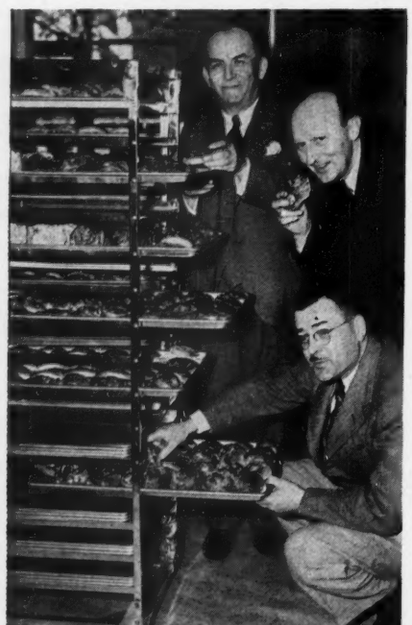
Florida, New York Align Food Laws With Federal

Florida and New York have enacted legislation bringing their state food laws into conformity with the federal. They follow the lead taken by Indiana and North Carolina.

Florida House Bill 1092 became law without approval June 12 and is effective July 1, 1939. The act is intended to provide legislation uniform as far as practicable with the Federal Food, Drug and Cosmetic Act and likewise uniform with the Federal Trade Commission Act to the extent that false advertisement of food, drugs, devices and cosmetics is prohibited.

The Florida sections on adulterated and misbranded foods differ mainly from the corresponding federal sections in the omission of the federal provisos on the coloring of citrus fruit and on artificial coloring in butter, cheese and ice cream. Added to the Florida section on misbranded foods is a paragraph which exempts from further labeling beverage food drinks offered for sale in sanitary glass containers, sealed or capped, which are refilled and reused by the manufacturer. Such exemption is allowed when the trade name of such product, the net content and declaration of artificial flavor or color, if used, appear at all times upon the cap, crown or lid of said container, and when the manufacturer files annually with the Commissioner of Agriculture an affidavit stating trade names and territorial sale limits.

Article 17 of the New York Agriculture and Markets Law relating to adulteration, packing and branding of food was amended June 8 by Chap. 797, Laws of 1939, which brings the adulterating and misbranding sections into substantial conformity with the corresponding federal sections. Ingredient listing is required on the label in conformity with the federal conditions. There are also sections on false advertising and on seizure and quarantine of food deemed unfit or unsafe. The amended article is effective Sept. 1, 1939, except that labeling provisions shall take effect Jan. 1, 1940.



DEDICATE EXHIBIT AT FAIR

The baking industry pavilion of the Standard Brands building at the New York World's Fair was dedicated to the industry on May 31 by Thomas L. Smith, president of Standard Brands (top), L. J. Schumaker, president of American Bakers Association (center), and Dr. James A. Tobey, director of the department of nutrition of American Institute of Baking (bottom). The pavilion houses a model bakery which shows each step in the production process.

Industry and Government Shape Standards for Food

Slowly but surely headway is being made in the establishment of standards under the Federal Food, Drug and Cosmetic Act. Leaders of the chocolate industry appeared before the Food Standards Committee early in June and again on June 12 to hear a discussion of proposed standards governing their industry. These hearings were marked by a great deal of controversy, and it was apparent that the industry was not able to present a united front on a number of points in the proposed standards. However, it is understood that the hearings did not develop many stubborn problems. The dextrose manufacturers put in an oar, urging that their product be used to enhance the delicate flavor of milk chocolate. Use of lecithin was also discussed, this being one of the points on which the industry could not agree.

Hearings on tentative standards for preserves are to be held in Washington the latter part of July and a hearing on a list of 31 additional coal-tar colors has been set for July 5. To be added to the list included in the regulations issued May 4, the new colors include one new red for use in foods.

Delay of some weeks is expected in the report by presiding officer Frank S. Hassell on the hearing held in May on milk products. The record in this proceeding is one of the longest yet made.

Proposed findings of fact on canned pea standards have been filed by L. S.

HEADS FEMA

Dr. Clarke E. Davis was elected president of Flavoring Extract Manufacturers Association at the convention, June 5-7, in New York. He is vice-president of the Virginia Dare Extract Co., Inc., Brooklyn, N. Y.

Argall, California Packing Corp., these representing in most particulars the consensus of the industry, with the possible exception of the eastern shore canners. Mr. Angall laid down the following principles: It is not necessary to declare the presence of salt or sugar in canned peas, and if any label designation is required for special packs, it should be merely "Without Added Sugar." Smooth skin peas should be known as "Early Variety" or "Alaskan Variety," if they are of Alaskan variety. Wrinkled skin peas should be designated as "Sugar Peas" or as "Sweet Wrinkled Peas." When peas have been dried and soaked, that fact should be stated on the label. The proposed findings also approve the government's proposal to use the alcohol insoluble solids test to determine mealiness.

Two extensions of time were granted the Canners League of California in which to file proposed findings of fact on canned peaches, pears, apricots and cherries, the final date being June 15. Meanwhile, individual canners, canning organizations and the dextrose industry have filed proposed findings of fact. Corn Industries Research Foundation presented a brief quoting testimony given at the hearings to the effect that as soon as sugar is mixed to make a sirup, no matter what type of sugar it may be, inversion into dextrose and levulose starts at once. Consequently, the brief argues, there is no need to make any special designation of dextrose, it always being present in sirup.

Michigan Canners Association is endeavoring to eliminate the word "sour" from the proposed designation for red cherries. It would change the government's designation, "Red Sour Cherries" to "Pitted Montmorency Cherries."

Clarification of the definition of "optional ingredient" is being sought by the tomato canning industry. There is a controversy as to whether the term refers only to such items as salt and sugar or whether is may apply to a portion of the main ingredient.

Flavor Manufacturers Hear Advice on Labels

Feeling that there never has been a time in the history of the industry when less was known about the style of package that could be used, members of Flavoring Extract Manufacturers Association devoted much of its annual convention to packaging. The headliner at the convention, held in New York, June 5-7, was Ole Salthe, consultant to the Food and Drug Administration. Calling the new Food, Drug and Cosmetic Act essentially a consumer law but also a measure under which Congress intended industry to live, Mr. Salthe advised the manufacturers to approach the problem of labeling under the law from the standpoint of common sense. Those with a spirit to conform will not only find a solution to their labeling problems but will be afforded an opportunity to win public confidence, he said.

Each appeal for exemption from the requirements that ingredients be listed on the label will be decided upon its individual merits, the flavoring manufacturers were told by J. W. Sale, senior chemist of the food division of the Department of Agriculture. But conclusive proof must be offered that naming the ingredients would give competitors an unfair advantage.

Presenting the case of the industry, Dr. F. M. Boyles, Seeley & Co., explained that the manufacturers have spent years in research to develop formulas which in themselves are simple and which would be revealed to competitors should the ingredients be listed on the label.

Officers elected at the convention include Dr. Clarke E. Davis, Virginia Dare Extract Co., Brooklyn, N.Y., president; John H. Beach, Seeley & Co., New York, Leslie S. Beggs, Styron-Beggs Co., Newark, Ohio, and W. F. Meyer, Warner-Jenkinson Manufacturing Co., St. Louis, vice-presidents; E. L. Brendlinger, Dill Co., Norristown, Pa., secretary; and L. P. Symmes, Baker Extract Co., Brooklyn, treasurer.

Food Stamp Plan Succeeds

Acclaimed a success in Rochester, N.Y., by local grocers, the Federal Surplus Commodities Corp., the Food and Grocery Conference Committee and sundry observers, the stamp plan for disposing of surplus foods is being extended to other cities. On June 5 it went into effect in Dayton, Ohio, and early this month will be tried in Seattle.

In Rochester, the first proving ground for the experiment, $18,000 worth of the blue stamps, good only for surplus foods, were traded in stores and redeemed by the U.S. Treasury in the first week. Of the 9,000 relief families in Rochester, 4,500, or half, applied for stamps during the initial week of the experiment. In Dayton, the relief and W.P.A. families are numbered at 15,000; in Seattle, at 25,000. As applied in Dayton, the plan is under local administration rather than federal, and the system used in Seattle is expected to be a combination of those applied in Dayton and Rochester.

Would Speed Food Standards

More headway would be made in the promulgation of food standards and regulations if there were an Assistant Secretary of Agriculture to study thoroughly all records of hearings on regulations and standards. That is the contention of sponsors of a Senate bill which provides for the appointment of an Assistant Secretary. This measure has been favorably reported by the Senate Agriculture Committee.

Supreme Court Upholds Marketing Agreements

In decisions of far reaching importance, the Supreme Court on June 5 upheld the Federal-State milk marketing agreement for the New York metropolitan area and ruled constitutional a similar agreement for the Boston area. Both marketing agreements were based upon the Agricultural Marketing Act of 1937, the constitutionality of which was directly challenged in the Boston case. In the New York case the judges were divided five to four, and in the Boston case, six to three.

The majority opinion held that Congress had the authority to regulate the marketing of milk in the New York area and further that it was proper to delegate that authority to the Secretary of

CONVENTIONS

JULY

10–20—Sixth International Technical and Chemical Congress of Agricultural Industries, Budapest, Hungary.

12—National Kraut Packers Association, Hotel Reiger, Sandusky, Ohio.

27–29—Southern Wholesale Confectioners Association, Inc., Read House, Chattanooga, Tenn.

28–Aug. 7—Seventh World's Poultry Conference and Exposition, Cleveland, Ohio.

AUGUST

8–11—International Apple Association, Netherland Plaza Hotel, Cincinnati.

23–26—National Food Distributors Association, Hotel Sherman, Chicago.

27–30—International Brewers Congress, Zurich, Switzerland.

28–31—Associated Coffee Industries of America, Pennsylvania Hotel, New York.

Agriculture. It was the ruling of the Court that since the milk was brought for use beyond state lines, the sale was a part of interstate commerce and hence subject to regulation by the Federal government.

As a result of the high court's decision, Secretary Wallace reinstated the marketing agreement in the New York area, effective July 1, it having been under suspension since Feb. 1, pending disposition of an adverse decision by a Federal district court. During this interim, milk prices had reached a chaotic state and unsuccessful attempts had been made to institute a local agreement. The Secretary also ordered hearings opened on June 26 for a proposed milk marketing agreement for the Chicago area.

NCA Announces More Standard Can Sizes

Additional recognized can sizes have been fixed by National Canners Association, supplementing those announced in FOOD INDUSTRIES for May (page 260). Twelve such "standards" have been added, each for a single commodity. One of the old standards for pimentoes has been dropped. So the list now includes 44 recognized can standards.

The industry is emphasizing the fact that 90 per cent of the entire pack of fruits and vegetables is handled in eighteen of the standard sizes of cans most commonly used. Each of the other 26 cans is needed for only a single commodity. They account for 7 per cent of the total pack. The remaining 3 per cent of the goods has not yet been reached in the standardization program because of inadequate data or small importance, but will be included as soon as practicable.

This voluntary cooperation of the industry through NCA is credited with the postponement of further legislative effort in Congress on the Somers' bill, which would have required all goods to be packed in eleven sizes of can.

Correction For Pickling Article

In spite of painstaking care in proofreading, errors at times creep into FOOD INDUSTRIES, as they do into all printed matter. In this case, the errors occurred in an article beginning on page 252 of FOOD INDUSTRIES for May, 1939, entitled, "How To Use Lactic Acid in Finishing Pickles and Pickle Products." In Table III of this article, in the footnote, the wording should be "such as A and B." On the same page (253), second column, fourth line from the bottom, "nor" should be "and." On the same page (253) insert above third line from bottom of third column, the following line "p=10% of mixture is to be lactic acid." And finally, on page 290, in equation 1, "s" should be "S."

Area of Production Redefined by Andrews

On June 17 Wage-Hour Administrator Andrews revised the definition of the territory within which exemption from hour restriction prevails under the "area of production" regulations.

There are three general conditions under which processing within the area of production prevails, legally speaking: (1) If all the goods come from farms in the general vicinity and not over seven persons are employed. (2) If the goods are dry beans and the location is a "first concentration point" for grading. (3) If the commodities come from farms in the immediate locality, and the establishment is in the open country or a town of 2,500 or less in population. "Immediate locality" means no more than 10 miles. There is no limit on the number of wage earners in this case.

Birds Eye to Expand

By the end of this year, quick frozen foods will be distributed through retail outlets in most of the large centers of the country by Frosted Food Sales Corp., New York. Plans have been made by the company for retail marketing expansion in the South, Southwest and far West, according to a statement by President Edwin T. Gibson in a speech before American Marketing Association in New York on May 25. Ten years ago the company had twelve dealers and four packing plants. Now, it sells through 4,950 retail dealers, distributes nationally to institutions such as hotels, railroads and restaurants and operates 29 packing plants. Mr. Gibson estimates the amount of food quick-frozen in the country aggregated about 200,000,000 lb. in 1938, as against 30,000,000 lb. in 1934.

FTC Files Complaints Against Food Companies

Violations under the Robinson-Patman Act for price discriminations in the sale of refined corn products and bakers yeast, and violations in the buying practices of a chain store, have been cited in recent complaints filed by the Federal Trade Commission. A preliminary investigation into the marketing practices of cane sugar refiners has also been made.

Respondents charged with price discriminations in the sale of finished corn products, both for household and industrial use, are Anheuser-Busch, Inc., St. Louis.; Piel Bros. Starch Co., Indianapolis; Clinton (Iowa) Co. and Clinton Sales Co., Chicago; Hubinger Co., Keokuk, Iowa; Penick & Ford, Ltd., Inc., New York; A. E. Staley Manufacturing Co. and Staley Sales Corp., Decatur, Ill.; Union Starch & Refining

CAPITAL VIEWS

FOOD LAW DATE—Persistent industry efforts have persuaded Congress to give more time for completing label revision jobs to meet the new food and drug law. But extension after Dec. 31 is explicitly limited by the extension bill to cases of costly containers or lithographed labels made before Feb. 1, 1939. No more extensions can be expected. The Department officials are likely to crack down vigorously as a New Year's greeting to those who dally.

FOOD CONTROL LAWFUL—The Supreme Court on June 5 fully upheld the authority of AAA to establish milk marketing agreements and enforce orders in interstate markets. Extension of Departmental activity is expected not only with respect to milk, but also later on numerous other food commodities. This is a long jump toward consumer price fixing. But the immediate guarantee is only regulated prices paid to milk producers.

ROBINSON-PATMAN ACT — The Federal Trade Commission, by its complaint against eight manufacturers of corn products, is undertaking to adjust price schedules, alleged now to violate the Robinson-Patman Act. Essentially, the charge is that the little fellows who want to market these corn products are entitled to more favorable prices under the law than they are getting. This case does not involve questions of collusion or illegal conspiracy between companies. It relates solely to the single company price schedules, each firm being a separate defendant in the proceedings.

FOOD STANDARDS ACTIONS—Necessarily slow progress in fixing standards of identity and definitions of substandard quality is not now so serious for the industries, since the effective date of most label features of the new food and drug act has been changed. Early action is expected from the Department on tomato products, canned tomatoes, eggs and egg products, and some new coal tar colors. The sugar battle continues to complicate plans for canned fruit findings. Canned vegetable standards are likely to appear about the same time. But milk products definitions ought not to be too far away (perhaps Labor Day). Ice cream studies will not even start till after the hot-weather rush season is over. All of this shows one good reason why Congress thought label regulations ought not to be too rigid too soon.

LABOR LAWS—Continued effort in Congress makes some adjustment of wage-hour legislation likely. But any amendment of NLRB's fundamental act is highly improbable.

Schedule of Action on Food Standards

	Docket number and commodity	Type of Standard or regulations	Presiding officer	Initial hearing date	Preliminary briefs due not later than	Examiner's findings published in Fed. Register	Secretary's order published in Fed. Register	Effective date of order
1-A	Tomato puree			Jan. 16, '39	Feb. 27, '39	April 4, '39	.....	.....
1-B	Tomato paste	Identity ..	J. M. Fox...	Jan. 16, '39	Feb. 27, '39	April 4, '39	.....	.....
1-C	Tomato catsup			Jan. 16, '39	Feb. 27, '39	April 4, '39	.....	.....
1-D	Tomato juice.....			Jan. 16, '39	Feb. 27, '39	April 11, '39	.....	.....
2	Canned tomatoes ..	Identity, quality, fill, substandard labeling.	J. M. Fox...	Jan. 15, '39	Mar. 10, '39	April 12, '39	.....	.....
3-A	Eggs			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-B	Liquid whole eggs...			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-C	Liquid mixed eggs...							
3-D	Frozen whole eggs...	Identity ..	J. M. Fox...	Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-E	Dried whole eggs....			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-F	Egg yolk.....			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-G	Frozen egg yolk.....			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
3-H	Dried egg yolk.....			Jan. 23, '39	Mar. 13, '39	May 10, '39	.....	.....
4	Coal-tar colors.....	Listing and certification	F. S. Hassell	Feb. 6, '39	Mar. 3, '39	April 8, '39	May 9, '39[1,5]	May 9, '39[2]
5-I	Canned peaches.....			April 10, '39	May 26, '39	.....	.....	.....
5-II	Canned apricots ...	Identity,		April 10, '39	May 26, '39	.....	.....	.....
5-III	Canned pears.....	quality, fill	J. M. Fox...	April 10, '39	May 26, '39	.....	.....	.....
5-IV	Canned cherries.....			April 10, '39	May 26, '39	.....	.....	.....
6	Canned peas	Identity quality, fill	J. M. Fox...	April 17, '39	May 29, '39	.....	.....	.....
7-A	Cream.....			May 1, '39	July 17, '39	.....	.....	.....
7-B	Whipping cream .			May 1, '39	July 17, '39	.....	.....	.....
7-C	Evaporated milk....	Identity ..	F. S. Hassell	May 1, '39	July 17, '39	.....	.....	.....
7-D	Sweetened condensed milk.....			May 1, '39	July 17, '39	.....	.....	.....
7-E	Dried skim milk ..			May 1, '39	July 17, '39	.....	.....	.....
8	Canned vegetables	Identity ..	F. S. Hassell	April 24, '39	June 19, '39	.....	.....	.....
9	Coal-tar colors[4].....	Amendment of regulations promulgated by order of May 9 (Docket 4)		July 5, '39	.....	.....	.....	.....

[1] Typographical errors corrected in Fed. Register, June 3, '39.
[2] Emergency declared to exist, order effective on publication.
[3] Extended from June 8, '39.
[4] Amending order of Docket 4.
[5] See also Docket 9.

Procedure for Fixing Standards for Foods

For fixing standards of identity, standards of quality, standards of fill of container and specifications for substandard commodities, the Department of Agriculture proceeds under the Food, Drug and Cosmetic Act according to a routine fixed by law, supplemented by departmental regulations.

The first formal action is announcement in the *Federal Register* of the date and place of the initial hearing, presiding officer (examiner), and the scope of the proceedings. Then the hearing is held, and after it closes, written briefs in argument or proposed findings of fact, or both, may be submitted by any interested party. When the examiner has prepared and filed the transcript of the hearing, the latest date at which such briefs may be submitted is announced.

The examiner is required to formulate his findings of fact on the basis of the hearing and briefs. He also formulates a suggested standard. The findings and recommendations are then published in the *Federal Register*. A copy of this issue is mailed to each of those whose appearance was entered at the hearing. Within ten days after receipt of this copy any interested person who wishes to object to any of the suggested findings of fact, conclusion or order, may file such objection with the hearings clerk of the Department of Agriculture.

The secretary then reviews the case and issues his order establishing the standard. This standard is published in the *Federal Register* and takes effect at some named date thereafter, not sooner than 90 days following the publication, except in case of emergency.

If there be further protest or appeal from the order of the secretary, this may take the form of comments to him on the basis of which he may order a reopening of the case, or it may take the form of appeal to the Federal Courts. To be recognized such appeal must be taken within 90 days of the issue of the secretary's order.

Commodities Exempted From Ingredient Listing

The commodities for which the Secretary of Agriculture has granted formal *temporary* exemption from statement of ingredients on the label are:

White bread; whole wheat bread; milk bread; raisin bread; evaporated milk; sweetened condensed milk; malted milk; unmixed, immature canned vegetables; unmixed canned fruits; canned oysters; cannel clams; canned shrimp (dry and wet pack); canned fish roe; sauerkraut; olives in brine; cheeses; oleomargarine; mayonnaise dressing; fruit preserves; sweet chocolate; sweet milk chocolate; lemon extract; orange extract; vanilla extract.

In addition to those formal exemptions, a tentative informal exemption has been granted for ice cream and other frozen desserts as an incident to the proceedings for fixing standards of identity.

Co. and Union Sales Corp., Columbus, Ind.; and American Maize-Products Co., New York.

The corn grinding capacity of these companies, together with that of Corn Products Refining Co., New York, N. Y., against whom a similar amended complaint was recently issued, is said to be 382,000 bu. a day.

In another complaint, the Commission charged Standard Brands, Inc., New York, and its subsidiary, Standard Brands of California, San Francisco, with price differentials in the selling of bakers' yeast which were not based on the quantities actually purchased by customers, but upon their estimated monthly requirements from all manufacturers, whether purchased from the respondents or from others, Standard Brands and its subsidiary produce between 55 and 65 per cent of the national production of yeast, manufacturing approximately 120,000,000 lb. a year.

Net buying practices of Great Atlantic and Pacific Tea Co. were attacked in a brief filed by the Commission's counsel before the U. S. Circuit Court in Philadelphia. The FTC argued that in buying on a net basis and in receiving quantity discounts under buying agreements, the A&P had received allowances and discounts in place of brokerage, an action that was in violation of Sec. 2(c) of the Robinson-Patman Act.

On a complaint of discrimination reportedly brought by a jobber, the FTC began an investigation into marketing practices of cane sugar refiners and their new policy of contract cancellations. There have been complaints of discrimination against the smaller buyer in an advancing market.

Seek Train-load Rates

In suspending until January proposed train-load rates on blackstrap molasses from New Orleans to Peoria and Pekin, Ill., the Interstate Commerce Commission on June 6 took the first step in a proceeding of wide-spread interest.

The rates, which were proposed by the Illinois Central and the Missouri Pacific railroads to enable them to meet the barge competition on this commod-

ity, name the base rate of 14 cents per 100 lb., minimum 1,800 tons, or 40 tank-car loads. This is the first time in many years that train-load commodity rates have been proposed.

Ultraviolet Sterilizes Brine for Curing Fish

Another use for ultraviolet irradiation in food processing has been revealed by the Pacific Fisheries Experiment Station, Prince Rupert, B. C. It has been applied successfully on an experimental basis for sterilizing the brines and pickles used in curing fish. Under certain conditions, these liquids can become a serious source of contamination to the fillets immersed in them.

Typical of the action of the ultraviolet was the effect reported on a 5 per cent brine contaminated with 1,750,000 organisms per cubic centimeter. Irradiation for two hours reduced the bacterial count to 44.

The source of the ultraviolet used was a lamp running longitudinally through the 6x25x9½-in. sterilizing tank about 1 in. above the bottom. A wire basket for containing the fillets revolved on a horizontal axis above the lamp, turning at about 20 r.p.m. and agitating the brine.

Changes Name of Bureau

On July 1 the Bureau of Chemistry and Soils became the Bureau of Agricultural Chemistry and Engineering. It continues under the direction of Henry G. Knight as chief, with W. W. Skinner as associate chief. The four Regional Laboratories of the Department continue under this Bureau, being directed by assistant chief Horace T. Herrick. The old Bureau of Agricultural Engineering is merged into the new Bureau with its activities continuing under S. H. McCrory, who becomes an assistant chief of the combined agencies.

Dairy Bureau Recovers Valuable Whey Products

Development of a new method for recovering three valuable products from whey has been announced by the Bureau of Dairy Industry. Starting with whey powder, of which dairies produced more than a billion pounds in 1937, the bureau scientists succeeded in producing milk sugar, a protein-rich concentrate and a solution rich in riboflavin or vitamin G (B_2).

The procedure is to thoroughly wet the whey powder in 95 per cent alcohol, then introduce the light paste formed into more alcohol, agitate and filter as rapidly as possible. The residue is the protein concentrate. The filtrate contains the lactose, or milk sugar, in a supersaturated solution. It is treated with hydrochloric acid and lactose crystals introduced to start crystallization. When crystallization is almost completed, the lactose is filtered out and washed in alcohol. The residue is then distilled to recover the alcohol. The vitamin concentrate, which is high in riboflavin content, or vitamin G, is the product which remains.

Construction News

	Pending (thousands)	Awarded June (thousands)	Total Awarded 1939 (thousands)
Bakery	.....	$40	$694
Beverages	$703	1,575	3,962
Canning and Preserving	.....	.....	200
Confectionery	.....	75	75
Grain Mill Products	1,350	315	1,565
Ice Manufactured	.....	.....	295
Meats and Meat Products	40	45	457
Milk Products	80	170	861
Miscellaneous	390	510	1,559
	$2,563	$2,730	$9,668

Commodity Prices Still Mark Time

After the passage of five weeks, from May 13 to June 17, the general commodity price index still held at a level of 74.7, although during the period there had been a rise to 75.5 on May 27, according to the *New York Journal of Commerce*. In contrast, the food price index of this same publication showed a drop from 65.3 on May 13 to 63.7 on June 17. However, a drop in food commodity prices is to be expected in the late spring, and this time the normal drop was re-inforced by a decline in grain prices caused by better moisture conditions in the grain states.

The extraordinary stability of commodity prices in general throughout the first half of 1939 is indicated by the fact that the low for the period, on April 1, of 74.5, and the high, on Feb. 18, of 76, compare to 74.7, the present index figure.

Individual food commodity prices did not vary greatly in the period from mid-May to mid-June. Wheat, No. 2 hard winter, fell from 72 cents on May 16 to 69¾ cents on June 16. In contrast, flour rose 5 cents a barrel in the same period, from $4.85 to $4.90. Corn fell during the month, from 51½ cents to 49 cents, and barley also fell, from 65 cents to 63½ cents. Important meat products also decreased in price between May 16 and June 16, beef from 15½ to 15 cents, and pork loins from 16 to 14 cents. Lamb was steady at 18 cents. Lard fell from $6.90 to $6.40, while eggs were unchanged. Butter increased in that period, from 23½ to 24½ cents, and cheese rose from 14½ to 15½ cents. Coffee was unchanged, but cocoa dropped from $4.45 to $4.35. Cottonseed oil was unchanged during the period.

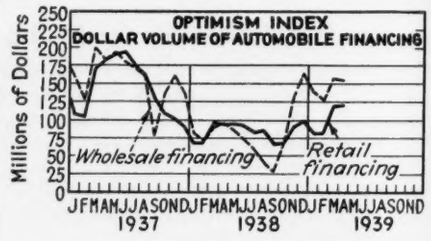
Low Olive Oil Output

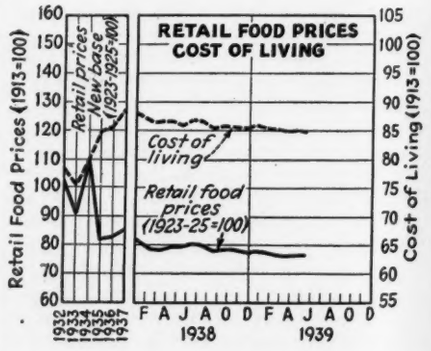
Estimates released by the United States Department of Agriculture for the 1938-1939 production of edible olive oil in the Mediterranean area promise less competition for producers of domestic salad oils. Production for the crop year is put at 782,800 short tons, compared to 1,289,100 short tons in the preceding crop year. The Department also reports that imports of edible olive oil into the United States for 1938 were 35,542 short tons, somewhat above the figure for the preceding year.

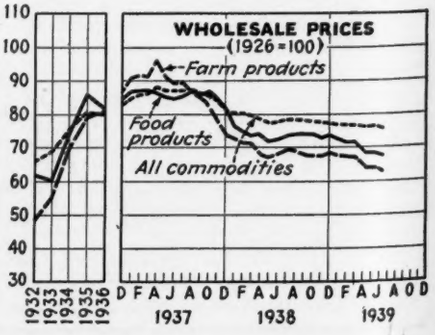
While these figures indicate curtailed supplies available for export to the United States in 1939, it is well to be cautious concerning the actual effect on the market for domestic salad oils. The Department, in its survey, points out that producing countries decrease their demand for olive oil in short crop years, substituting other oils for some of their normal consumption. This would indicate that supplies will be sufficient to meet export demands, but that the price may be higher.

Small Wheat Crop Due

Estimates for June 1, released by the United States Department of Agriculture in mid-June, indicate that the 1939 wheat crop will be the smallest in the last three years and will also be some


OPTIMISM INDEX
DOLLAR VOLUME OF AUTOMOBILE FINANCING
Millions of Dollars
Wholesale financing
Retail financing
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1937
1938
1939


RETAIL FOOD PRICES
COST OF LIVING
Retail Food Prices (1913=100)
Cost of Living (1913=100)
Retail prices New base (1923-1925=100)
Cost of living
Retail food prices (1923-25=100)
F A J A O D F A J A O D
1938
1939



50,000,000 bushels below the ten-year average. Production of winter wheat is forecast at 523,431,000 bu., while spring wheat condition on June 1 of 75 per cent of normal indicates a crop of 185,000,000 bu. Last year's spring wheat output was 244,164,000 bu., and the ten year average was 206,000,000.

Total wheat crop for 1939 is therefore indicated to be 708,431,000 bu., compared to 930,801,000 bu. in 1938. However, the forecast indicates a crop that is likely to exceed domestic needs and still leave something to be added to the 270,000,00 bu. carried over from last year's bumper yield.

Sugar Deliveries Up

Reports of the sugar section of AAA show sugar deliveries in the United States for the first four months of 1939 totaling 1,983,933 short tons, raw value. For the same period of 1938, deliveries amounted to 1,801,540 short tons, raw value.

Milk Output at Record

With milk production per cow on June 1 at the same level as a year earlier, and 2 per cent more cows producing, milk production set an all time high in June. Even on a per capita basis, his production was the highest on record and was about 6 per cent above the June 1 average for 1925-1929.

Data for the Charts

In preparing the curves shown on this and the preceding page of FOOD INDUSTRIES, data were obtained from the following sources: Prices received by farmers, U. S. Department of Agriculture; employment, payrolls, wholesale and retail prices, U. S. Department of Labor; cost of living, National Industrial Conference Board; commodity price index, *N. Y. Journal of Commerce;* business activity index, *Business Week;* data for retail and wholesale financing of automotive equipment, U. S. Department of Commerce.

INDICATORS

FROZEN FISH in cold storage on May 15, 1939, totaled 35,161,000 lb., compared with 45,981,000 lb. a year before and an average of 32,631,000 lb. for the date over the preceding five years.

ACREAGE PLANTED to peas for manufacture this year is reported by the BAE at 259,900 acres, compared to 334,920 acres last year and an 8-year average of 285,800 acres.

BUTTER PRODUCTION in April, 1939, totaled 145,123,000 lb., compared to 148,072,000 lb. in April, 1938, and a 1930-1937 average for April of 136,-188,000 lb.

CHEESE PRODUCTION in April, 1939, was estimated at 41,145,000 lb., compared to 48,424,000 lb. in April, 1938, and an average for April in 1930-1937 of 49,600,000 lb.

EVAPORATED MILK PRODUCTION in April, 1939, was 202,090,000 lb. (case goods), a decrease of 2 per cent below April, 1938, but 17 per cent above the 1933-1937 average.

OLEOMARGARINE SALES in April, 1939, as indicated by sales of Internal Revenue stamps, totaled 23,711,310 lb., compared to 31,575,890 lb. in April, 1938.

CANDY CONSUMPTION in 1938 was valued at $298,000,000 and amounted to over 2,000,000,000 lb., according to the U. S. Department of Commerce.

FLOUR PRODUCTION in May, 1939, was reported by *The Northwestern Miller* for mills representing 60 per cent of U.S. production, as totaling 5,559,835 bbl., compared to 5,015,792 bbl. in May, 1938.

FRUITS, frozen, in storage on June 1, 1939, were 83,474,000 lb., compared to 90,307,000 lb. a year before, and a 1934-1938 average for the date of 48,-709,000 lb.

VEGETABLES, frozen, in storage on June 1, 1939, totaled 45,976,000 lb. This compared to 21,411,000 lb. in storage on June 1, 1938.

BUTTER IN STORAGE on June 1, 1939, amounted to 85,168,000 lb., compared to 55,266,000 lb. on June 1, 1938, and a 1934-1938 average of 31,917,000 lb. for the date.

CHEESE, all kinds, in storage on June 1, 1939, totaled 79,180,000 lb. This compared to 91,160,000 lb. on June 1, 1938, and to an average of 75,037,000 lb. for the date in the years 1934-1938.

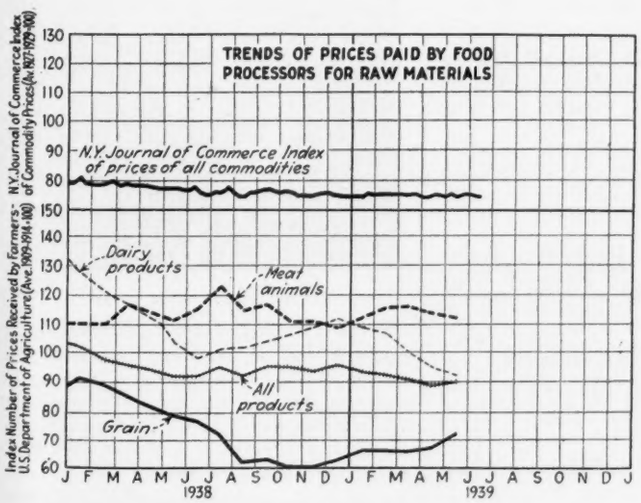
EGGS, case equivalent, in storage June 1, 1939, were 9,257,000 cases, compared to 8,839,000 cases on June 1, 1938, and an average for June 1, 1934-1938, of 9,525,000 cases.

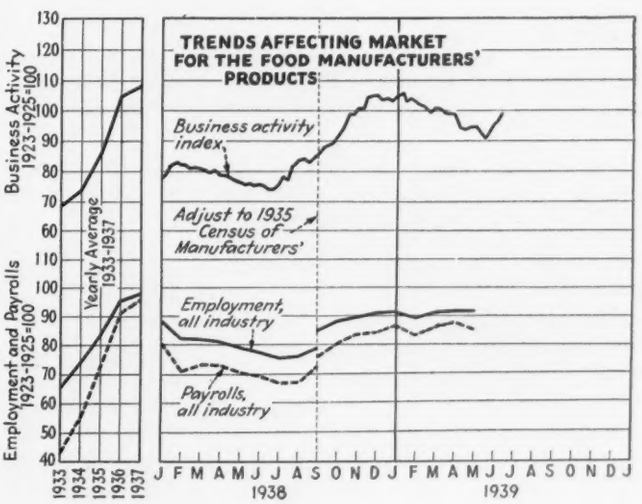
POULTRY, all kinds, in frozen storage on June 1 of this year amounted to 66,798,000 lb. The figure a year before was 52,049,000 lb., and the average for the date in 1934-1938 was 52,877,000 lb.

MEAT, all kinds, in cure and storage on June 1, 1939, was 621,250,000 lb., compared to 547,766,000 lb., on June 1, 1938, and an average of 659,706,000 lb. on June 1, 1934-1938.

LARD in storage June 1, 1938, totaled 139,235,000 lb., compared to 123,581,-000 lb. a year before, and an average of 137,988,000 lb. for the date in 1934-1938.

DUN & BRADSTREET'S Weekly Index of food commodity prices stood at $2.19 on June 13, compared to $2.37 one year previous to that date.


TRENDS OF PRICES PAID BY FOOD PROCESSORS FOR RAW MATERIALS
N.Y. Journal of Commerce Index of prices of all commodities
Dairy products
Meat animals
All products
Grain
Index Number of Prices Received by Farmers-U.S. Department of Agriculture (Ave. 1909-1914=100)
N.Y. Journal of Commerce Index of Commodity Prices (Av. 1927-1929=100)
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939


Business Activity 1923-1925=100
Yearly Average 1933-1937
Employment and Payrolls 1923-1925=100
1933 1934 1935 1936 1937
TRENDS AFFECTING MARKET FOR THE FOOD MANUFACTURERS' PRODUCTS
Business activity index
Adjust to 1935 Census of Manufacturers'
Employment, all industry
Payrolls, all industry
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939

Men, Jobs & Companies

INDUSTRY

Ambrosia Chocolate Co., Milwaukee, has purchased the ice cream bar coating formulas, trademarks and good will of the Siren Division of Lamont, Corliss & Co., New York.

American Maize-Products Co., New York, has announced a new technical service. The company will test confectioners' products to determine the territories in which they may be sold successfully under the conditions of humidity and temperature prevailing in those territories. And confectioners will be advised as to what changes are needed to meet conditions in other localities.

American Fruit Growers, Inc., is constructing at Murfreesboro, Ark., a peach-packing plant with a capacity of 40 cars a day.

American Molasses Co. of New York is establishing a Midwestern plant at Chicago. Facilities for manufacturing and storing sugar sirups, invert sirups, sugar and molasses will be housed in two buildings with 50,000 sq.ft. of floor space. In charge of the new plant will be R. S. Taussig, vice-president and manager of the Western division.

Arden Farms, Inc., will build a $70,000 ice cream plant at Fresno, Calif.

Borden Co. recently purchased the ice cream business of Bartholomay Co., Rochester, N. Y.

Bridgeman-Russell Co. has installed new evaporating equipment at its plant in Duluth.

Canada Dry Bottling Co. of New Orleans, Inc., has formally opened its new $100,000 plant.

Harold H. Clapp, Inc., Rochester, N. Y., baby food manufacturers, has been sold to American Home Products Corp., Jersey City, N. J., by Johnson & Johnson. H. W. Roden remains as operating head of the concern.

Coca-Cola Bottling Co. will erect a $250,000 bottling plant in Atlanta and will construct a $200,000 plant at Asheville, N. C.

Gentile Bros. Co., Cincinnati, has completed a $200,000 plant for ripening of green bananas from Central America. The plant will have ten insulated rooms (a capacity of 22 cars of bananas), with controlled temperature and humidity. Starting at 70 deg., the temperature is lowered slowly as the bananas ripen to between 56 and 60 deg.

GEORGE A. EASTWOOD

Formerly in charge of the byproducts departments of Armour & Co., Chicago, he was made executive vice-president on June 2, a new management position in the Armour organization. His previous position is filled by Daniel M. Flick.

Jerpe Commission Co., Omaha, has started construction of a $60,000 seven-story building to be used for cold storage purposes.

Kroger Grocery & Baking Co. is building, at a cost of $100,000, a plant at Montezuma, Ga., for storing, shelling and sorting peanuts.

C. C. Lang & Son, Baltimore, has purchased Blandford Pickle Co., Fremont, Mich.

Quaker City Flour Mills, Inc., Philadelphia, has acquired the plant and business of Hampstead Flour Mills, Hampstead, Md.

Rubsam & Horrmann Brewery, Stapleton, New York, is building new fermenting cellars with 11,216 sq.ft. of floor space.

Swift & Co. plans a $40,000 addition to its plant at Schenectady, N. Y.

United Cape Cod Cranberry Co., Barnstable, Mass., recently suffered a loss estimated at $240,000 when fire destroyed a cold storage plant containing 19,000 bbl. of cranberries.

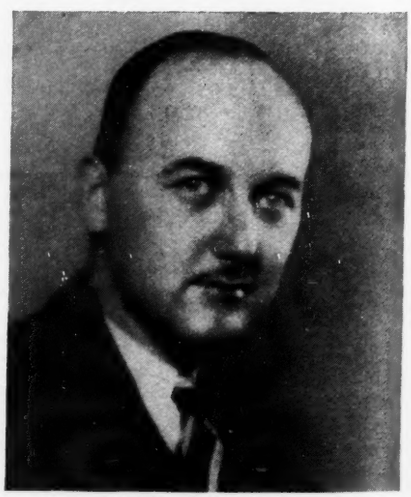
University of Tennessee has leased its immersion method of quick freezing to private business interest headed by S. Neal Varnell, Cleveland, Tenn.

PERSONNEL

Harry Baccigaluppi on July 1 became vice-president and Eastern manager of California Grape Products Co., Ltd. He has been in the California wine industry 23 years and is a former president of American Wine Association.

Lorenz S. Baur, formerly research chemist with General Foods Corp., Battle Creek, Mich., is now research chemist with M. & R. Dietetic Laboratories, Inc., which is located at Columbus, Ohio.

Avery A. Clark, who has been managing the Ovid, Neb., plant of Great Western Sugar Co., has been appointed superintendent of the company's plant at Scottsbluff.



DR. E. J. CAMERON

For the last thirteen years a member of the research staff of National Canners Association, he has been appointed director of the association's research laboratory to succeed the late Dr. W. D. Bigelow. Dr. Cameron has served as acting director since the death of his predecessor.

Albert A. Dietz, Toledo, began work in April on the American Maize-Products Co. fellowship in carbohydrate chemistry at Purdue University.

Frederick C. Dressel is now assistant to the president of Salerno-Megowen Biscuit Co., Chicago.

Henry D. Egly, Fort Wayne, Ind., will manage the new $300,000 soybean processing plant to be put into operation this fall at Painesville, Ohio, by A. E. Staley Mfg. Co. Mr. Egly formerly was vice-president of Central Soya Co.

Frank L. Eaton has been appointed general manager of the Omaha branch of Beatrice Creamery Co.

Bradford C. Edmands, H. D. Foss Co., heads up New England Manufacturing Confectioners Association.

Robert Einstein is the new president of Mutual Ice Cream Co., Inc., Pittsburgh.

Oscar Gloor, Hot Springs, has been named president of Arkansas Bakers' Association for the coming year.

T. Kline Hamilton, president of Diamond Milk Products Co., Columbus, Ohio, is the new president of Ohio Dairy Products Association.

Perry Hayden, Tecumseh, Mich., recently was made president of American Millers' Association.

L. W. Jeffery has been appointed manager of the Hillsboro, Ore., plant of Carnation Milk Co.

A. H. Kelling is now director of technical service to production both at the Argo, Ill., and the Edgewater, N. J., plants of Corn Products Refining Co.

Benjamin E. Knauss is now general manager of Northern Dairy Co., Marquette, Mich.

Donald Morgan, Morgan Packing Co., Traverse City, Mich., was chosen secretary of Michigan Canners Association at the recent annual meeting.

G. Virgil Rector, department manager, Fairmont Creamery Co., Omaha, has been named vice-president of the company.

H. H. Rosseau has become vice-president of Grocery Store Products, Inc., New York.

Edward O. Schenk, formerly president of Columbus (Ohio) Packing Co., and general manager following the purchase of the firm by Armour & Co., has resigned. He is succeeded by A. L. Leonard, of Armour's Reading, Pa., plant.

Francis A. Smith, formerly secretary-treasurer of Shellabarger Mill & Elevator Co., Salina, Kan., on June 15 became assistant secretary of Millers' National Federation.

JAMES I. SMITH, JR.

He has been elected president of Corn Canners Service Bureau, Chicago. Mr. Smith is connected with Esmeralda Canning Co., Circleville, Ohio, and is president of Ohio Canners Association.

Roy E. Swenson, James E. Skidmore and Grover C. Minter, all of Chicago, have been elected vice-presidents of General Mills, Inc. Harry C. Lautensack, New York, has been made vice-president of the Eastern division.

Harry Wallace, assistant manager of Shredded Wheat Co., Niagara Falls, N. Y., has been appointed manager of the company's Canadian plant in Niagara Falls, Ont.

W. G. Wolf, formerly plant superintendent of Siren Mills Corp., Chicago, on May 22 took charge of the production of fountain syrups in the Siren Division of Lamont Corliss & Co., Fulton, N. Y.

DEATHS

Edward A. Bain, 80, beverage manufacturer of Richmond, Va., May 22, at Petersburg.

Frank H. Carpenter, 68, president of Pfeffer Rice Milling Co., Houston, Tex., May 31.

Harold H. Clapp, 49, founder and first president of Clapp's Baby Foods, Inc., Rochester, N. Y., at Mineola, N. Y., June 13.

Morris Friend, 80, last of four founders of Beatrice Creamery Co., at Lincoln, Neb., June 10.

Louis Magenheimer, 54, secretary of Mason, Au & Magenheimer Confectionery Mfg. Co., Brooklyn, N. Y., recently. He was the son of one of the founders.

Fred D. Meyers, 70, owner of Meyers Bottling Works, Lockport, N. Y., May 19.

Charles S. Pillsbury, 61, director of Pillsbury Flour Mills Co., May 21, at Rochester, Minn.

Julius Stroh, 83, president of Stroh Brewery Co., Detroit, June 2.

Francis E. Thompson, 74, president of Moxie Co., Boston, since 1904, June 4.

John Trausch, 63, founder of Trausch Baking Co., Dubuque, Iowa, June 9.

August E. Uihlein, 68, former managing director of John Eichler Brewing Co., New York, May 21.

Harry A. White, 50, for many years an executive with California Packing Corp. and a member of the board of directors of National Canners Association, in San Francisco, recently.

ASSOCIATED INDUSTRIES

Allegheny Ludlum Steel Corp. has appointed W. L. Weaver district sales manager of the New England territory, with headquarters located at Springfield, Mass.

Anchor Hocking Glass Corp. and the Anchor Cap & Closure Corp. are closing their St. Paul office and opening a new office in Minneapolis.

Briggs & Stratton Corp., Milwaukee, will manufacture and sell the Graham variable speed transmission unit. Utilizing metallic rolling contact in the presence of oil, the transmission gives infinite variation in speed.

William M. Bristol, Jr., vice-president in charge of production at Bristol-Myers Co., Hillside, N. J., has been elected president of Packaging Institute, Inc.

Buffalo Foundry & Machine Co. has opened a new branch in Cleveland.

Karl Kieffer Machine Co., Cincinnati, has appointed Mailler Searles, Inc., San Francisco and Los Angeles, its representative in California.

Link-Belt Co., Chicago, will be the distributor for Twin Disc friction clutches and clutch couplings.

Nash Engineering Co., South Norwalk, Conn., has appointed Edward A. Mead sales manager.

Pressed Steel Tank Co., Milwaukee, has appointed Norman A. Evans sales manager.

Stokes & Smith Co., Philadelphia, will be represented in Missouri and Kansas by R. L. Rogers, Jr., St. Louis.

United States Rubber Co. has appointed Willard H. Cobb general manager of the mechanical goods and general products division.

Just off the Press

BOOKLETS • LITERATURE • BULLETINS

Food Plant Equipment

BENCH MIXER—American Machine & Foundry Co., 511 Fifth Ave., New York, N. Y., announces the Glen "20" bench mixer with three speeds ranging from 110 r.p.m. for low to 425 r.p.m. for high, in two new folders.

GRAIN CONDITIONER — The new "Forster Grain Conditioner" for the control of the moisture of grain to one-tenth of 1 per cent is described and illustrated in a recent bulletin by The Forster Manufacturing Co., 463 N. Seneca, Wichita, Kan.

GRINDER—Allis-Chalmers Mfg. Co., Milwaukee, Wis., lists more than eighty materials that can be handled by their new "Inter-Plane Grinder" for grinding, shredding and refining, in Bulletin No. 1267.

GRINDING MILL—Bulletin No. 46 of Abbé Engineering Co., 50 Church St., New York, N. Y., describes the impact grinding mill for grinding and pulverizing beans, beets, sugar, chickory, salt, coffee, ginger, pepper and cinnamon.

GYRATING SCREENS—The J. H. Day Co., Cincinnati, Ohio, has issued Bulletin No. 375, describing and illustrating "Ro-Ball" stabilized gyrating screens for separating wet or dry materials.

MATERIALS HANDLING—Catalog No. 333 giving a complete list of roller chain and sprockets including 128 pages of illustrations, list prices and dimensions; and Bulletin No. 331 describing Rex coal and ash handling equipment for power plants, have been issued by Chain Belt Co., Milwaukee.

MILK EVAPORATORS — "Buflovak" stainless steel vacuum milk evaporators are discussed in Bulletin 319, complete with specifications, flow sheets and application data, by Buflovak Dairy Division, Buffalo Foundry & Machine Co., 1653 Fillmore Ave., Buffalo, N. Y.

PURIFIER—"The Modern Purifier", published by Industrial Chemical Sales, 230 Park Ave., New York, N. Y., discusses the use of activated carbon in specific industries and on specific products for the removal of undesired colors, odors, tastes and flavors.

SCRUBBER — Peabody Engineering Corp., 580 Fifth Ave., New York, N. Y., announces the "New Peabody Triple Action Scrubber" for cleaning gas and air or removing dust, fog and other particles from exhaust before discharging it into the atmosphere, in Bulletin No. H-201.

Plant Accessories and Supplies

BOILER CONTROLS — McDonnell & Miller, Wrigley Bldg., Chicago, Ill., has published a bulletin covering its various devices for boiler water level control.

BOILERS—Edge Moor "Low Head" boilers from 100 to 600 hp. for use in packing and canning plants, warehouses, dairies, distilleries and breweries are described in Bulletin 105 by Edge Moor Iron Works, Inc., 30 Rockefeller Plaza, New York, N. Y.

CONDUIT FITTINGS—The Pyle-National Co., 1334 N. Kostner Ave., Chicago, Ill., has issued three bulletins on new standard conduit fittings: Bulletin 1110 on rectangular "Pylets," Bulletin 1115 dealing with FS and FD series "Pylets," and Bulletin 1125 describing vaportight lighting fixtures.

ELECTRICAL EQUIPMENT — General Electric Co., Schenectady, N. Y., has recently issued the following publications: Bulletin GEA-594B on control panels for industrial electric heating; Bulletin GEA-2964 describing a full-voltage magnetic starter; and Bulletin GEA-2872 dealing with metal enclosed switchgear.

ELECTRIC MOTORS—The Louis Allis Co., Milwaukee, Wis., has prepared Bulletin 508E on A.C. and D.C. explosion-proof motors, and an 8-page Bulletin No. 610 on NEMA standards and definitions useful in the selection of electrical apparatus.

ELECTRIC MOTORS—Recent publications of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., include: Bulletin No. 2183-A on "Lo-Maintenance Direct Current Motors and Generators," Bulletin No. 2125-C dealing with "Explosion-Proof Motors," and Bulletin No. 2203-B describing Gearmotors.

FITTINGS AND COUPLINGS—Bulletin M-700, published by Pittsburgh Equitable Meter Co., Pittsburgh, Pa., deals with specifications, list prices, illustrations and descriptions of "Raymond" fittings and couplings for steel pipe.

GROUND ROD—Anaconda Wire and Cable Co., 25 Broadway, New York, N. Y., has issued an 18-page illustrated Bulletin C-14, with descriptive and statistical data on star ground rod and ground wire clamps.

METERS—Bailey Meter Co., Cleveland, Ohio, has announced its new bulletins No. 105 and 194-A dealing with a system of feed water control for measuring feed water flow to the boiler, and the Bailey synchro-meter for transmitting and indicating records or integrating the measurement of flow, level, pressure and temperature at a distant point, respectively.

PUMPS—Worthington Pump and Machinery Corp., Harrison, N. Y., has issued Bulletin No. W-319-B1A describing high pressure, forged-steel-casing, centrifugal pumps for high pressure steam generating units; and Bulletin No. W-450-B19C on Types QE and QAE deep well turbine pumps for water supply.

STERILIZING EQUIPMENT—Entoleter Co., Inc., The Safety Car Heating and Lighting Co., P. O. Box 904, New Haven, Conn., has issued Form 3599–10–37, describing the "Entoleter" machine for destroying insect life in cereal foods packages.

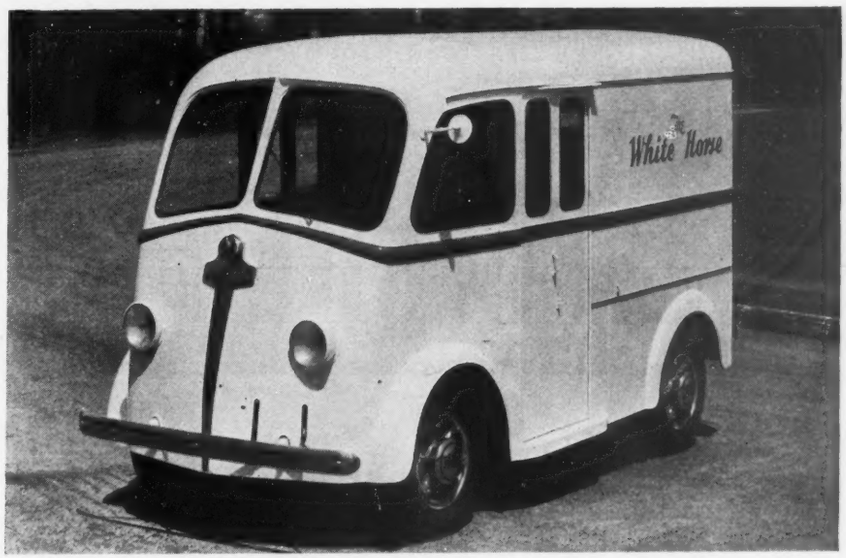
Food Equipment News

REVIEW OF FOOD PROCESSING EQUIPMENT, ACCESSORIES, AND SUPPLIES

Water Pump

TUTHILL PUMP Co., Chicago, Ill., has developed a sanitary, non-corrosive water pump. This is of the internal gear and crescent displacement type and is designed for direct motor drive at speeds up to 1,800 r.p.m. The pump incorporates the Tuthill mechanical seal in order to provide leakproof performance.

Other advantages claimed by the manufacturer for this pump, in addition to its sanitary and non-corrosive features, include: self-priming; low power consumption; positive suction lift; pressures up to 100 lb. per sq.in.; built-in relief valve; and three-bolt foot or flange type mounting. Pumps are available in 50 gal. per hr. and 100 gal. per hr. sizes.



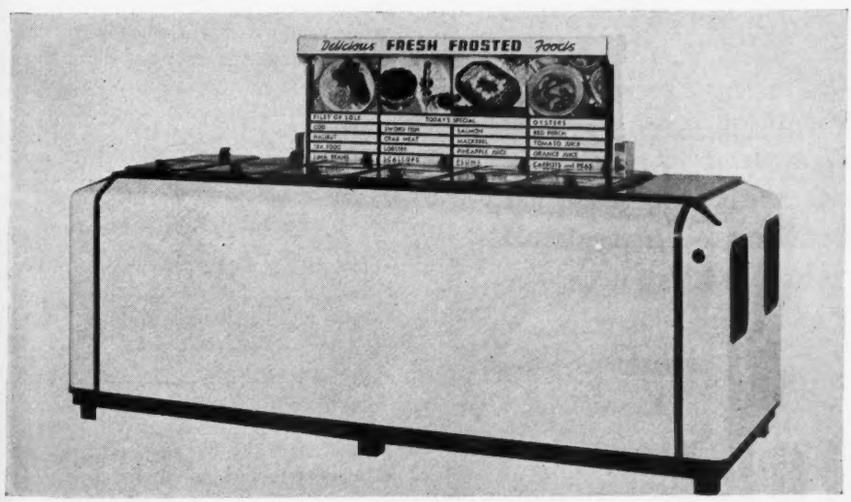
Light delivery truck designed for economy

Retail Cabinet for Frozen Foods

BASTIAN BLESSING Co., 242 E. Ontario St., Chicago, Ill., has redesigned its cabinets for frozen food retailing. The new cabinets have the same capacity as the old, but now use a vertical direct expansion compressor instead of the horizontal machine formerly used. These cabinets are equipped with the patented Russ "Trayveyor" sliding shelves. These enable the operator to carry and dispense quickly an unusually large variety of frozen products. The design is such that even a very short person can easily reach the bottom of the storage space in the cabinet.

Light Delivery Truck

A LIGHT DELIVERY TRUCK of novel design, called "The White Horse" has been brought out by White Motor Co., Cleveland, Ohio, for use in door-to-door delivery service such as carried out by dairies and bakeries. The truck, shown in the accompanying illustration, has been designed for the purpose of providing the utmost in convenience and economy for this type of service. The motor is of air-cooled type, eliminating the hazard of freezing in winter; it is of 45 hp., and will operate the truck at a maximum speed of 45 m.p.h. One advantage claimed is the fact that a single gallon of gasoline will operate this motor for 6½ hours of idling time.



New retail cabinet for frozen foods

All-Purpose Homogenizer

MARCO Co., INC., 5355 Westminster Ave., Philadelphia, Pa., is making the "Flow-Master" homogenizer for all dairy purposes. Among the applications for which this machine is designed are the production of homogenized milk, ice cream mix, cream, sour cream, and various forms of cheese.

This machine is of compact design being 34 in. high, 27 in. long and 19 in. wide. Its capacity ranges from 200 to 500 gal. per hour in the Model D size and from 800 to 1,000 gal. in the Model MD size. It is designed as

a self-contained unit with all moving parts inclosed. The homogenizing unit itself is mounted on the frame at convenient working height for easy disassembly and cleaning.

Among the advantages claimed for this machine are hydraulic balance of the pump rotors, automatic compensator wear control to insure high volumetric efficiency, side compensator adjustments, variable valve control, self-adjusting compensating seals which can be cleaned or discarded daily, and non-pulsating delivery.

Small Recording Instruments

C. J. TAGLIABUE MFG. CO., Brooklyn, N. Y., is now making 9 in. recorders for temperature and pressure. This line of instruments is said to occupy only half the space of the larger 10 or 12 in. recorders, also made by the Tagliabue Co.

Counter Coffee Grinder

ENTERPRISE MFG. CO. of Pennsylvania, Philadelphia, Pa., has developed a new and improved model of counter grinder

Counter grinder for coffee.

for coffee. As shown in the illustration, a feature of this grinder is the indicator mounted on the side which indicates to both the customer and the operator the fineness of grind for which the machine is set. Another feature is the totally inclosed and sanitary design of the machine. It is equipped with a ¼-hp. motor of the brush lifting type which delivers added power under load.

Safety Floor Material

OHIO RUBBER CO., Willoughby, Ohio, has developed a resilient safety flooring material for use in factories. This is composed of aluminum oxide abrasive aggregates bonded into the surface of a resilient rubber compound. It is claimed that this flooring gives exceptional efficiency as a non-slip flooring, whether it is wet, dry or smeared with grease or oil. It is also said to be both sound absorbent and comfortable to stand on.

The new flooring is applied in either tile or sheet form and is available in various colors. It may be used in new buildings or can be applied over old floors of wood, concrete or other materials. Installation is made by means of a special cement sold with the flooring.

Factory Lift Truck

WEST BEND EQUIPMENT CORP., West Bend, Wis., has developed a new model of the "Weld-Bilt" hydraulic lift truck. This is designed with a self-contained hydraulic unit placed in a horizontal position in the frame of the truck. When so placed the unit is protected from damage which might otherwise occur to it in use. It is entirely insulated from the head of the truck and the only connections are the

ACCESSORY BEFORE THE FACT

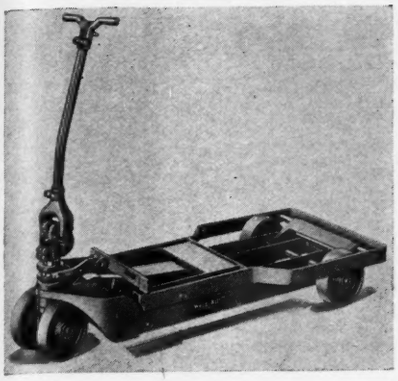
If you want somebody rubbed out,

your conscientious assassin will retain a reliable finger-man . . . just so he'll know what he's doing.

If you want to use heat with a degree of control and a measure of economy never achieved before, you will look into this Kemp Industrial Carburetor. It is the accessory-before-the-fact of firing that premixes gas and air to give you exactly the *kind* of flame that will do the most good, a flame that will burn in a completely enclosed chamber, that will even burn in solutions, a flame that will never change its characteristics until you change the valve-setting of the Industrial Carburetor. It (by the way) produces no carbon-monoxide and it makes a foot of gas do more work than it ever did before.

This Kemp Industrial Carburetor is an honored institution in a long list of the world's best-known food plants. May we tell you more? Address **The C. M. Kemp Mfg. Co., 405 East Oliver Street, Baltimore, Maryland.**

KEMP of BALTIMORE



Welded hydraulic lift truck

connecting rods from the pump lever to the pump rod.

In construction this truck is of all-welded steel. Standard lift is 3 in., with higher lifts available. Lowering is accomplished by means of a pedal and is controlled as to speed by foot pressure on this pedal. The four wheels are equipped with anti-friction bearings and are made with axles of alloy steel. The front turntable is equipped with a ball bearing and a bronze bushing on the king pin.

These trucks are available in standard capacities of 2,500, 3,500, 5,000 and 6,000 lb. Greater capacities can be furnished on order.

Liquid Level Controller

FISHER GOVERNOR CO., Marshalltown, Iowa, has developed a new long-range liquid level controller, Type 246, "Level-Trol." This controller is of the remote type and is designed to maintain sensitive, throttling level control in towers, accumulators, reboilers and other equipment. Its operating medium can be either air or a non-corrosive gas. The control can be used on liquids of all specific gravities and is said to be particularly suited for use with high viscosity oils. The controller comes in two sizes, one with a 14 in. adjustable level gage, and the other with a 32 in. adjustable level gage.

Sanitary Food Pump

A NEW LINE of sanitary food pumps has been developed by Blackmer Pump Co., 1971 Century Ave., Grand Rapids, Mich. This pump has been designed for handling almost any food product that can be made to flow through pipe lines including such products as corn, cranberries, catsup, peas, pumpkin, starches, lard, molasses, soup, vegetable oils, salad dressing, sirup, food juices, yeast and dog food.

The pumps are provided with clamp type heads for easy removal. When the head is removed the impeller and buckets can be slid out of the case. In this way the entire interior is accessible for thorough cleaning in a few moments time. These pumps follow in general the Blackmer rotary pump design and are of bucket type. In this design all wear is concentrated on the buckets which are inexpensive and can be easily replaced when worn. It is said that the design does away with any tendency to churn or emulsify the product being handled.

The new pumps are available in two sizes of 50 and 100 g.p.m. capacity, respectively. They can be furnished for either direct motor connection or for belt drive.

Air Filter for Air Conditioning Systems

AIR-MAZE CORP., 5200 Harvard Ave., Cleveland, Ohio, have developed the Air-Maze air filter for use in cleaning circulating air of ventilating, heating or air-conditioning systems. A feature of this filter is that it is fire-

How can we use modern machines at a PROFIT?

—the DATA YOU WANT IS READY!

Is your problem one of cutting? Then get the latest information on Robinson Knife Cutters—the cutters designed to permit almost *instant* inspection and adjustment of knives—knives that are extra heavy, with liberal inserts of hard high carbon steel! Robinson means the latest, most modern equipment for Cutting, Grinding, Pulverizing, Mixing, Crushing—and the Robinson Catalogs put on your desk the data that may help you materially cut your production costs and improve the quality of your product . . .

Replace now with modern equipment—the coupon below is for your convenience.

CLIP THIS COUPON AND MAIL AT ONCE . .

ROBINSON MFG. CO., MUNCY, PA.

I am interested in modernized equipment—(Mixers—for Crushers—Grinders—Cutters—Screening Machines—Elevators—Conveyors—indicate which). Kindly send Catalog to

Name .....Company .....

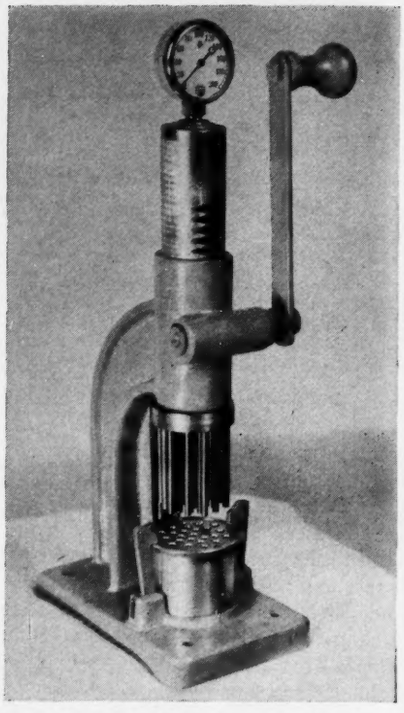
Title .....Address.....

proof and also will act as an efficient flame arrester to prevent the transmission of flames through it.

This filter is made up of a maze of alternately placed flat and crimped wire screen baffles having meshes of increasing fineness in the direction of air flow. The baffles are of heavily galvanized material in order to resist corrosion. The graduation of the screen is said to cause the larger particles to be collected first in the large mesh and the finer dust to be deposited on the succeeding smaller meshes. This minimizes the tendency to clog and obstruct free air flow. In use, the screens are coated with an oily material which conforms to the regulations of the Fire Underwriters.

Canners' Quality Grade Tester

FOR DETERMINING the quality of peas and corn before canning, William Christel, Valders, Wis., has developed the "Texturemeter," a simple instrument for grading these products as to tenderness or degree of maturity. As shown in the picture, the device embodies a group of 25 punches, each $\frac{5}{32}$ in. in diameter. These punches are assembled into a movable head, raised or lowered by a crank and ratchet.



Device for grading peas and corn before canning

A sample of the product to be tested is placed in the cup and the lid with its perforations corresponding to the positions of the punches, is affixed by means of the clamps on the base of the machine. Then, by means of the crank, the punches are forced down through the sample. The pressure required to do this is recorded on a gage. A release button returns the gage pointer to zero after the test.

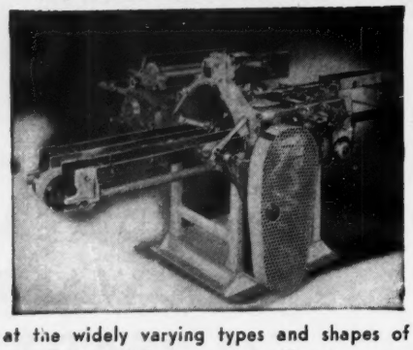
The instrument is easily portable, weighing but 10 lb. Its cost is $50.

Electric Valve

MCDONNELL & MILLER, Wrigley Building, Chicago, Ill., have developed an electrically operated valve suitable for insuring tight closure against fluid pressures up to 150 lb. per sq.in. It is also claimed that this valve assures positive operation for services where a high degree of dependability is essential. This is accomplished by reinforcing the action of the weight of the solenoid armature with a spring-loaded leverage system which tends to keep the valve tightly closed. Positive opening of the valve is assured by means of a long lever connected to the armature of the solenoid. Valve and seat are of stainless steel and

Here's Versatility in MACHINE WRAPPING

All these types of wrapping handled by MODEL FA



All of these different styles of wrapping are produced by our FA type machines.

Look at the widely varying types and shapes of packages illustrated here, and you'll get a new idea of versatility in wrapping machines.

All these packages, and many others of equally distinctive appearance, are wrapped on our FA type machines. Moreover, they are wrapped neatly and perfectly, presenting a quality appearance on display. Note, for example, the smooth, neat wraps on the extension edge candy box and the slide fastener—both difficult shapes to handle. This type of machine wraps a wide range of sizes and is quickly and easily adjustable. Handles any kind of wrapping material—glassine, transparent cellulose, waxed paper, foil, or plain paper wrappers. May be equipped with Electric Eye for accurate registration of printed material fed from a roll.

Because of the sales-appealing wrapping it produces, and its extreme economy of operation, the Model FA has been adopted by package goods manufacturers in many different fields.

Consult our nearest office.

Write for Literature

PACKAGE MACHINERY COMPANY, Springfield, Mass.

NEW YORK CHICAGO CLEVELAND LOS ANGELES
Peterborough, England: Baker Perkins Ltd. Melbourne, Australia: Baker Perkins Pty., Ltd.
Mexico, D. F., Apartado 2303 Buenos Aires, Argentina: David H. Orton, Maipu 231

PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

packing is eliminated through the use of a Sylphon bellows.

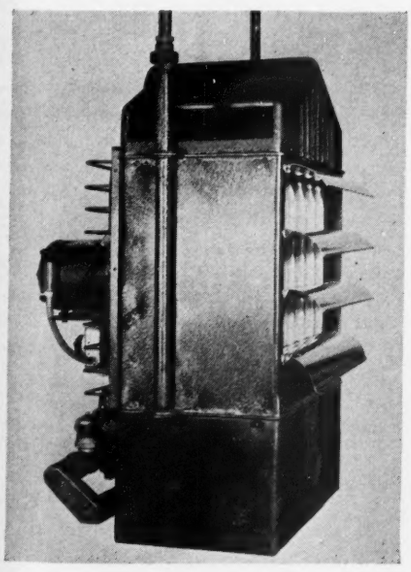
This new valve will handle any fluid that is non-corrosive to its working parts, at inlet pressures up to 150 lb. per sq.in. Discharge capacity ranges from 1,100 to 3,200 lb. of water per hour, depending on the differential between the inlet and discharge pressures. Standard electrical rating is 115 volts, 60 cycles, but other voltages and frequencies can be accommodated.

Vertical Gear Motor

U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif., has brought out a vertical design of gear motor, complete with flanged base, called the "Syncrogear" Type GDV unit. This motor has been especially designed for vertical operation and the unit incorporates a small geared oil pump which lubricates the bearings, gears and pinions.

Gas-Fired Unit Heater

Automatic Gas Steam Radiator Co., 441 Brushton Ave., Pittsburgh, Pa., is marketing a gas-fired unit heater which is self-contained and operates without steam or water. The unit is for suspension from the ceiling and can be fired with either natural or manufactured gas. In addition to heating, it can be adapted for use in ventilating, cooling or drying operations. It is available in five sizes ranging from 85,000 to 200,000 B.t.u. per hour capacity. The design includes a safety pilot which turns off the gas if the pilot goes out or burns too low to insure ignition. Air circulation is by means of a motor-driven fan located at the back of the unit.



Gas fired unit heater

Lift Plug Valves

Homestead Valve Mfg. Co., Coraopolis, Pa., has a line of three-way brass easy-turn lift plug valves for service on air, water, oil or gases at pressures up to 150 lb. and temperatures below 400 deg. F. These valves are available in sizes from 1¼ to 3½ in. and in three different styles of port arrangement: Style D, permitting flow from either end and out a side opening or vice versa; Style E, permitting flow from the left-hand end and out the side opening or straight through; and Style F, permitting flow from the right-hand end and out the side opening or straight through.

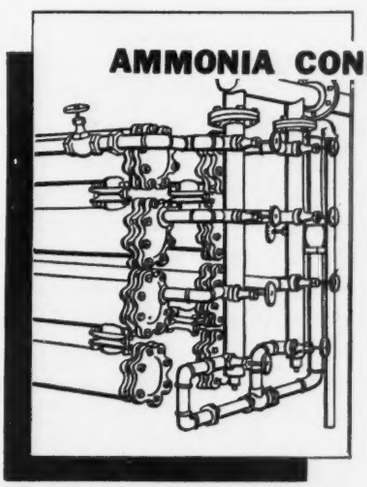
Direction of flow in these valves is changed by a quarter-turn of the operating lever. The "lift-plug" feature of the design is claimed to assure easy operation and to permit the plug to be sealed in the body in either of the two extreme positions of travel or in a mid-position in which all parts are closed.

Two more TOUGH Cleaning Problems MADE EASY with Oakite Cleaning

AVOIDS MOLD TROUBLES EASILY

Bacteria, spores and mold multiply rapidly, particularly in hot weather... BUT... you can always safeguard your product against contamination and spoilage losses, if you do these two things daily: Clean all processing equipment and utensils first with the proper Oakite material... Then kill bacteria by sterilizing with Oakite Bactericide. You will find sanitation maintenance is easy, effective, economical... your product more fully protected with an extra margin of safety.

AMMONIA CONDENSER MAINTENANCE



How are your ammonia or other refrigerant condensers working? Is head pressure increasing . . . efficiency decreasing? Many plants find the safest, easiest way to avoid these troubles is to periodically clean equipment with Oakite Compound No. 32. No dismantling necessary! Rust and scale deposits are thoroughly removed, increasing heat transfer efficiency. Job is done quickly, at low cost, without harming equipment.

Write for FREE booklets packed full with helpful, money-saving data on food plant sanitation. No obligation.

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OAKITE CERTIFIED CLEANING

MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

Concentrated Products

(*Continued from page 370*)

lb. were most satisfactory. Cutting the apples into small pieces or into quarters, rather than mascerating, was desirable in order to allow the steam to pass readily through the entire mass.

Drying in a large container or in comparatively thick layers was not found satisfactory because browning and caramelization occurred before drying was complete. The same was true of thinner films dried at 100 deg. C. over night. Vacuum drying, however, may be of doubtful practicability commercially. Spread on glass plates in a film not exceeding $\frac{1}{8}$ in. in thickness the fruit could be dried at temperatures as high as 120 deg. C. without burning if a current of air was passed over it. However, this required careful watching. The dried film was easily removed from the glass plates while hot, was light in color and of excellent flavor. This suggests the possibility of using the drum drying process now extensively used in the manufacturing of dried milk. Successful drying was accomplished by spreading the material in a thin film on a granite surface and drying at a temperature of 140 to 160 deg. C. for only twelve to fifteen minutes. However, the product was somewhat darker and care was necessary to remove the film before it was completely dried in order to avoid burning. The flavor was excellent. The concentrate may be prepared by drying at a high temperature until most of the moisture is removed and then completing the drying at a lower temperature.

THE most satisfactory procedure for the preparation of the new apple and vegetable concentrate is illustrated by the following method, which applies more specifically to apples. Edible fruit or vegetables are washed, where necessary, peeled, cored, and quartered or sliced, and then suspended in a 3 per cent solution of sodium bisulphite for fifteen minutes. The material is thoroughly washed and drained. It is cooked, either by the open kettle or by the pressure cooking process.

If the open kettle process is used, approximately 50 per cent of water is added and cooking is continued for approximately 25 minutes, the time depending somewhat upon the condition of the fruit. If pressure cooking is used, the prepared material is placed on a perforated porcelain or similar plate or support in a pressure cooker, and the temperature is rapidly raised until steam begins to escape. The pressure cock is closed and the rapid heating is continued until the pressure reaches 7 lb. The heat is adjusted so that this pressure is maintained for fifteen minutes. The pressure is then suddenly released. This bursts the fruit cells producing a white, fluffy sauce. Juice remaining in the bottom of the kettle is mixed with the fruit before drying.

The cooked material from either the open kettle or the pressure cooker is worked through a ricer in order to insure uniformity. It is spread on the drying equipment in a film $\frac{1}{8}$ in. or less in thickness and dried at a temperature approximating 75 deg. C. for a period of 1.5 hr., preferably in a rapid current of air. It is probable that the drying time can be reduced. The hot, dried film is easily removed from the drying plate.

The concentrated product from both fruits and vegetables prepared by this method was not attacked by bacteria, yeasts, or molds, and has kept satisfactorily for long periods of

A FEW CENTS FOR INSECT CONTROL RETURNS DOLLARS IN SAVINGS

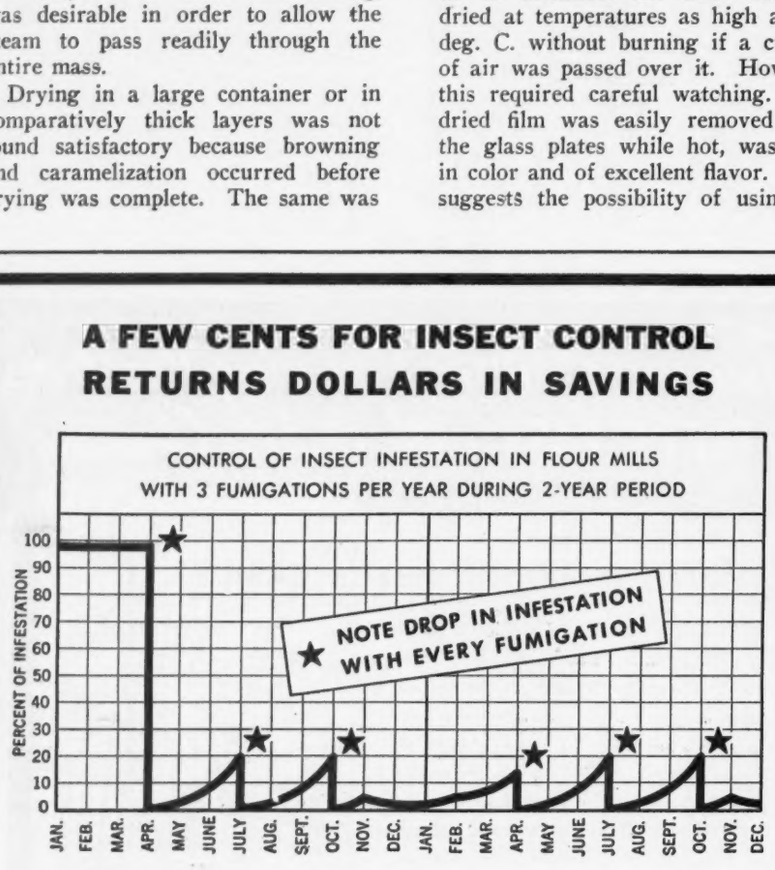


Chart shows how infestation is controlled by periodic HCN fumigation over a two-year period. Note the sharp drop in insect count at each job.

Insure a Clean Mill and a Clean Product With

LIQUID HCN

Insects multiply so rapidly that infestation in your plant is widespread before you realize it—*unless* you take effective measures of control.

LIQUID HCN stops your losses and helps you to produce a clean product. It is effective, economical, and preferred by leading mills throughout the country. It kills all stages of insect life—eggs, larvae, and adults. The cost is trifling compared to the damage uncontrolled infestation causes.

Cyanamid supplies HCN in all forms (LIQUID HCN, Commercially Pure; CALCYANIDE, *ZYKLON Discoids and *CYANOGAS). As a pioneer in the fumigation field, Cyanamid can give you specialized cooperation in cutting your infestation losses down to an absolute minimum. Write us, giving the dimensions of your mill or warehouse, and we will show you how cheaply you can obtain complete control with LIQUID HCN.

*Registered U. S. Patent Office

American Cyanamid & Chemical Corporation

Insecticide Department

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

KANSAS CITY, MO.; AZUSA, CALIF.

time. Samples which have remained in open containers in this laboratory for several years are still in excellent condition and retain a flavor judged to be identical with that of the freshly cooked products. In fact, the first successful sample of apple concentrate, which was prepared in February, 1933, is still available and reconstitutes into sauce essentially identical with that prepared from fresh apples. Under the atmospheric conditions prevailing here, the concentrated apple product will remain in an open container without any apparent absorption of moisture or decomposition.

Probable Commercial Methods

Since this new concentrate, as finally developed, is prepared by a process which is comparatively simple, it would appear to be readily adaptable to large scale commercial development. Batch or tunnel dryers of the type now used for the production of ordinary dried fruits might be adapted to this purpose by utilizing trays constructed from glass or nontarnishable metal. Belt or drum drying might also be feasible.

A valuable feature of this concentrate is the ease with which it may be reconstituted into a food product essentially identical with the same product prepared directly from the fresh fruit or vegetable and possessing the same characteristics, including color and taste or flavor. Sauce from the apple concentrate may be quickly prepared by mixing with sufficient water to give the desired consistency and then heating it to approximately the boiling point. Reconstitution may be effected in about two minutes. The concentrate may be reconstituted in cold water in fifteen minutes or less. Similarly, other fruit and vegetable concentrates may be quickly and satisfactorily reconstituted into their respective food products.

Concentrates from various fruits and vegetables, when reconstituted, are believed to be suitable for most or all purposes for which fresh fruit or vegetables are now utilized by cooking. The reconstituted apple concentrate is highly satisfactory for the preparation of sauce, pie filler, and other purposes. The flavor of the apple concentrate may be increased or varied by adding apple juice from the same or from other varieties of apple to the cooked sauce before drying. The concentrated product may also be pressed into bars and sold as a confection.

Transportation costs and storage space requirements, are, of course, reduced to a minimum. The concentrated product may be wrapped in paper, or cellophane, or other transparent wrappings. It may also be canned. It is thus available for immediate use. The process has been successfully applied to the production of a concentrate from various fruits and vegetables. It should prove of value in the utilization of cull and C-grade apples, as well as edible, but not marketable, surpluses from a variety of fruits and vegetables.

Keep Fermenting Kraut Cold

(*Continued from page* 380)

might be held at a low level.

In spite of the feasibility of this suggestion for preserving kraut in an excellent condition, it is far more practical and economical to use every precaution in packing kraut under best of conditions; and when fermented as shown by testing for acidity, cool the room so that the solubility of carbon dioxide will be at a high level, but more important, so that undesirable micro-organisms may be checked.

★ Cercon is an edible, tasteless wax suitable for coating food products requiring protection from the air.

It is supplied in six colors—Snowdrift, Lemon, Orange, Tangerine, Apricot, and Olive. It has an ASTM penetration of 50 with the 50 gram weight attached.

We will be very glad to send test samples to any interested company.

THE CONEWANGO REFINING CO.
WARREN, PENNSYLVANIA

Food Technology

(*Continued from page 401*)

ice" temperature for three days. Due allowance was then made for the heat of fusion of ice in making the specific heat determinations. The specific heat of fresh butter passes through a sharp peak at about 20 deg. C. (68 deg. F.), and an equally sharp maximum at 34 deg. C. (93 deg. F.).

For any given temperature range, the refrigeration requirement for butter is calculated by integrating the specific heat curve in the same temperature range.

Digest from "Influence of Temperature on the Specific Heat of Butter," by L. Riedel, *Zeitschrift für die gesamte Kalteindustrie* 45, 177, 1938 (Published in Germany).

Three Rules for Improving Sanitary Quality of Ice Cream

MORE CAREFUL ATTENTION to the preparation and care of flavoring and coloring material used in ice cream will result in lower bacterial counts.

1. Nutmeats should be dipped in boiling sugar solution (approximately 50 per cent, to which has been added 1 per cent of salt, for fifteen seconds and then dried in an oven at 250 deg. F. for 2.5 minutes. Nutmeats prepared in this way are best stored in glassine bags or tin cans at room temperature.

2. Color solutions should be made with water at 180 deg. F. and then placed in clean sterile bottles. These bottles should be kept covered and stored at 40 deg. F. Measuring graduates should be washed and rinsed with hot water at 180 deg. F. each day before using. Unused portions of color solution should not be returned to the stock solutions. Stock solutions should be prepared fresh weekly. Old solutions should not be used without heating to 145 deg. F. for 30 minutes.

3. Operators handling fresh fruits should have clean hands and clothing. All equipment used in handling fruits should be cleaned and disinfected before use. Fruits with delicate flavors, such as fresh strawberries and raspberries, can be satisfactorily pasteurized by being mixed with sugar and heating to 145 deg. F. for 30 minutes. If necessary, certain flavor extracts can be heated to 145 deg. F. for 30 min. without serious injury to flavor.

Digest from "Sanitation of Products Added to Frozen Desserts," by P. H. Tracy. *Journal of Milk Technology*, 2, 118, 1939.

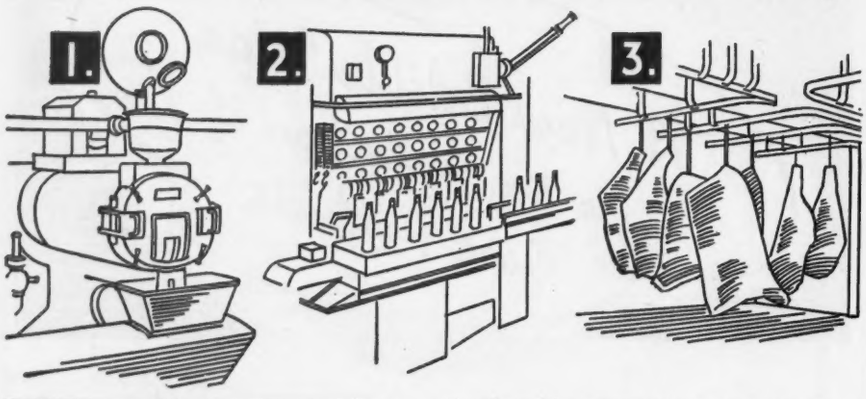
Protecting Foil Cheese Wrappers

CLEAR COLORLESS, corrosion-resisting lacquer coatings on aluminum foil cheese wrappers must be at least 0.0055 mm. (0.22 mil) thick to give effective protection. The film must be able to withstand temperatures up to 80 deg. C. (175 deg. F.) without blistering or loss of adhesion. Hydrochloric acid is not a satisfactory medium for testing corrosion resistance, but reliable results can be obtained with a solution made by adding 99 g. sodium chloride, 0.5 g. calcium chloride, 0.5 g. magnesium chloride and 5 g. citric acid to one liter of 0.1 per cent nitric acid. If the lacquer resists this solution for ten days or longer it will protect the aluminum foil from the exposure conditions encountered by cheese wrappers. For mold prevention, the first essential is thoroughly air-tight wrapping of the cheese, and the lacquer film itself should contain no air bubbles.

Digest from "Protective Finishes on Aluminum Foil," by E. Erbacher and H. Haug, *Farbe und Lack* 1939, 125 (Published in Germany).

HTH PRODUCTS*

Cut Spoilage Losses, Protect Purity



1. To protect the quality and purity of ice cream, all containers and equipment—cans, freezers, pasteurizers, homogenizers, etc.—must be kept not only clean but germ-free. That is why HTH Products are used in so many successful ice cream plants.

2. The sanitation problem of the beverage bottler is two-fold. His products must meet rigid public health requirements and they must be free from molds, yeasts and other micro-organisms that cause spoilage—a job made-to-order for HTH Products.

3. Meat packers find HTH Products effective and dependable for sanitation in every part of the plant—edible rooms, killing floors, cookers, freezers, curing rooms, smoked-meat hanging rooms, cutting rooms, sausage manufacturing rooms, sliced-bacon coolers, etc.

Food and beverage plants cannot lose a single round in the constant battle against bacterial contamination without suffering substantial dollars-and-cents loss.

Save money—fight spoilage this simple, effective way. Use HTH Products for complete plant sterilization.

HTH Products are dependable chlorine sterilizers in powder form—convenient to use, always full-strength, quickly effective in action. Added to water, they make germicidal hypochlorite solutions of the desired strengths for flushing or spraying all surfaces with which food or beverage products come in contact. And HTH Products are so economical, they can be used freely throughout the plant.

Send today for full information on how HTH Products can prevent spoilage and protect the quality of *your* products.

HTH PRODUCTS

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*HTH PRODUCTS (HTH, HTH-15 and LO-BAX) . . . DRY ICE . . . LIQUID CARBON DIOXIDE . . . AMMONIA, ANHYDROUS and AQUA . . . CAUSTIC SODA . . . SODA ASH . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . PH-PLUS (FUSED ALKALI)

Synthetic "Cream" for Confectionery

"CREAM" for use in making confectionery of various kinds can be made without consuming much actual cream, according to German Patent 670,549 (granted Jan. 20, 1939, to Dietrich Hildisch, Oslo, Norway). The preparations are based on train oils, preferably whale oil, which are moderately hydrogenated (hardened) and then emulsified in water. The emulsion may be blended with a smaller quantity of milk or buttermilk, and it is well to add also a small proportion of glycerin.

As an example, a whale oil is used which has been hydrogenated until its melting point is about 30 deg. C. (86 deg. F.). A blend is made from 10 lb. of this hardened fat, 5 lb. of buttermilk, 1.5 lb. of sugar and 12 oz. of glycerin. The resulting emulsion is stirred thoroughly while passing in air, to form a creamy product.

Two Sunflower Seed Oils

A STUDY of the influence exerted by sunflower seed hulls on the quality of the oil revealed the presence of an oil in the hulls which is entirely different from the true seed oil. The ether and petroleum ether extracts from the hulls are pale yellow, salve-like in consistency, and melt at 46.5 to 47.5 deg. C. The most conspicuous difference from the seed oil is the high content of free fatty acids (20 per cent calculated as oleic acid) in the hull oil. There are phosphatides in the hull oil, and its 2 per cent of unsaponifiable matter includes some sterols. The principal effect of the hull oil, aside from altering free fatty acid content, is clouding of the clear seed oil. In the samples which were examined the hulls contained 11 per cent oil.

Digest from "Sunflower Seed Hulls and Their Effects on Quality of the Oil," by A. Skipin and G. Pavlov, *Masloboino Zhirovoe D'elo* 14, No. 3, 8, 1938 (Published in Russia).

Rancidity in Fats

NO SINGLE PREVENTIVE can be prescribed for preserving fats from rancidity. The complex picture presented by causes, varying exposure conditions and varying sensitivity of different fats to different causes, makes every case of fat preservation more or less of an individual problem.

Rancidity may be caused by hydrolysis, by oxidation, by bacteria or by any combination of these causes. According to the liberated products and the nature of the rancid fat, there are four kinds of rancidity; acidic, tallowy, ketonic and aldehydic.

Aside from scrupulous care to prevent infection of edible fats with bacteria and mold spores, and low-temperature storage which retards both oxidation and bacterial growth, there are certain other useful precautions. Salt (1 per cent) in butter inhibits mold growth, while in margarine, benzoic acid (not over 0.2 per cent) may be employed. Light is harmful because it accelerates oxidation and some bacterial processes, hence storage in the dark, or in opaque wrappers, is desirable. There are numerous chemical inhibitors of spoilage, some being specifically anti-oxidizers while others depend on antiseptic action.

A remarkable feature is that raw vegetable fats behave differently toward inhibitors than do refined vegetable fats and animal fats. Thus, the "inhibitols" (from cottonseed oil or like oils) and hydroquinone are effective only for refined vegetable fats and animal fats, whereas the acidic inhibitors are ineffective for these but

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HOWELL ELECTRIC MOTORS COMPANY
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Representatives In All Principal Cities

are active in the raw vegetable fats.

Digest from "Rancidity in Fats and Oils," by E. L. Krugers Dagneaux, *Chemisch Weekblad* 36, 179, 1939 (Published in Holland).

MEAT PRODUCTS

Salt Content of Cured Ham

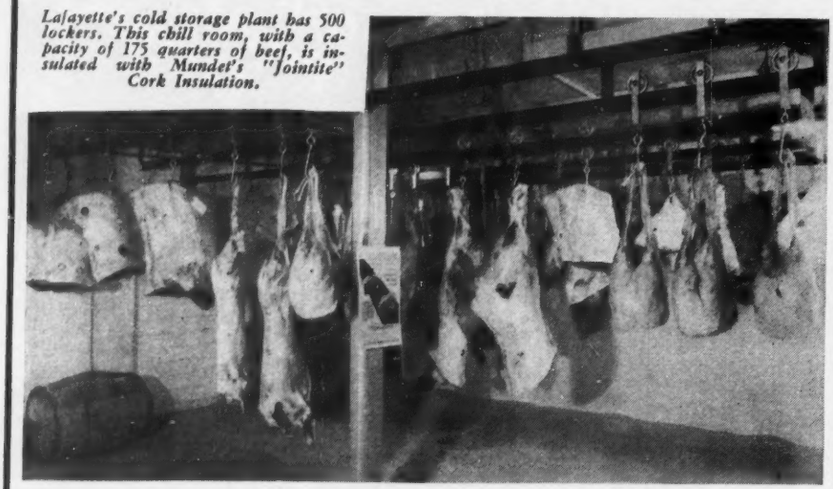
SALT CONTENT in eight commercial hams (three brands) under investigation ranged from 13.5 to 18.14 per cent in the dry matter of the outer lean portions, slices from the skin side of hams and from the center contained from 11.23 to 14.58 per cent and from 11.63 to 17.42 per cent respectively. Judged from these hams, it appears that 11 per cent of salt is sufficient to prevent spoilage in the center of hams next to the bone where it is most likely to occur. This amount of salt also seems to provide an adequate safety factor for keepability under variable conditions.

In dry curing, the curing agent is applied directly to the meat in definite amounts and is absorbed in a relatively short time. Therefore, prolonged curing will not affect the ultimate salt content of the ham, because this is determined by the amount of curing agent applied. In case of brine curing, however, the length of the curing period directly influences the amount of salt absorbed by the meat.

Concentration of salt in the meat must be considered in relation to the weights of salt and meat, whereas the curing period for a given cut is proportional to the thickness of the meat, rather than to its weight.

Digest from "Salt Content of Cured Hams," by R. C. Miller and P. T. Zeigler. *Food Research* 4, 55, 1939.

Lafayette's cold storage plant has 500 lockers. This chill room, with a capacity of 175 quarters of beef, is insulated with Mundet's "Jointite" Cork Insulation.



"We cut the Motor off for 24 hours

. . . the chill room lost 3°, the locker room 2° and sharp freezer 3° during that time — it was a swell testimonial to the insulation."

The insulation is Mundet Corkboard.

The letter, from the Lafayette Food Lockers, Lafayette, Indiana, indicates the economy of insulating with Mundet Cork Insulation.

In all low temperature operations, Mundet Corkboard is a dependable barrier to heat infiltration. Through its efficiency the problems of temperature control are simplified and costs of operation reduced. Whether your problem concerns air conditioning or food manufacturing, quick freezing or cold storage, it will pay you to get the facts on Mundet Cork Insulation.

Mundet offices in principal cities offer responsible engineering assistance including complete installation, if desired. We shall gladly submit quotations and recommendations without obligating you. Write today for insulation data. Address Mundet Cork Corporation, Insulation Division, 65 S. Eleventh St., Brooklyn, N. Y.

MUNDET
CORK INSULATION

SUGAR

Recovering Sugar from Press Water

SUGAR RECOVERY from waste waters, raising the sugar yield by about 0.5 per cent of the weight of beets, can be effected by systematic treatment of the press water. This conclusion was reached after exact analyses of wash waters, spent diffusion water and press water, and was confirmed by actual trial.

The preferred procedure is to treat the press water with about 0.4 to 0.8 grams of lime per liter, recover sugar from the precipitate and save the filtrate either for making milk of lime or for use as diffusion water.

Press water is emphasized because repeated analysis showed it to contain more sugar, but the treatment may also be applied to spent diffusion water if desired.

Digest from "Waste Waters in Sugar Manufacture," by Henri Devos, *Sucrerie Belge* 58, 169, 190, 1939 (Published in Belgium).

Electrolytic Purification of Cane Juice

COLLOIDAL IMPURITIES are removed from cane juice by an electrolytic method, according to French Patent 836,750 (granted Jan. 25, 1939, to Emile J. Hugel). In the flocculation cell one electrode is aluminum and the other may be iron, lead, copper or zinc. The potential difference between the electrodes is variable. As an example, pressed cane juice is adjusted to the preferred alkalinity (pH = 7 to 7.4), heated to 60-70 deg. C. and introduced into the electrolytic cell. Colloidal impurities begin to flocculate in a few minutes. After flocculation is complete the juice is heated to 95-100 deg. C. and decanted or filtered from the precipitate.

MISCELLANEOUS

Soy Bean Protein Not a Substitute for Egg White

FAT FREE SOYBEAN FLAKES from No. 2 Illini soybeans were ground to 60 mesh, extracted continuously for 24 hours with petroleum ether (b.p. 30 to 60 deg. C.), then ground to 100 mesh. Three successive water extractions of this flour dissolved most of the soluble protein. Acidification with acetic acid to pH = 5 precipitated the protein which was then dried by laboratory methods—alcohol and ether washing—leaving a white powder.

Recovery was about 52 per cent; unaccountable loss was about 10 per cent.

For conversion of nitrogen percentage to protein, the factor of 5.71 is correct. The older factor of 6.25 is incorrect.

Foaming is a marked property of the protein in solution, suggesting its use where egg white is used in cooking. But it does not produce thickening or binding of food ingredients similar to the effect of egg proteins in custards or muffins. However, it is tasteless and wholly unobjectionable as an addition to other foods.

Digest from "A Study of Protein Extract from Soybeans With Reference to Its Use in Food," by Sybil Woodruff, Evelyn Chambers, and Helen Klass. *Journal of Agricultural Research*, **57**, 737, 1938.

Climate Affects Quality of Dried Apricots

CALIFORNIA dried apricots vary in color and SO_2 retention with the locality of production, atmospheric conditions during drying, as well as with the storage temperature, length of storage period and the moisture content of the fruit. Apricots dried in warm and relatively dry districts retain a better color and more SO_2 than those dried in a cool and foggy climate, regardless of the origin of the fruit.

Storage time and temperature are more important factors than the atmosphere in which the fruit is stored. Prolonged storage periods and higher temperatures increase the loss of SO_2 and accelerate color deterioration. Neither air, nitrogen, CO_2 or a vacuum prevent the decrease in SO_2 or color deterioration of the fruit during storage.

In freshly dried fruit, a relation exists between color and the SO_2 retention during drying; the latter is determined by ripeness, variety and chemical composition of the fruit.

Digest from "Effect of Drying and Storage Conditions on Color and SO_2 Retention of Dried Apricots," by P. F. Nichols, E. M. Mrak and R. Bethel. *Food Research* **4**, 67, 1939.

Removing Bacteria from Dishes

TESTS made in the washing of soiled dishes show that apparently low bacterial counts can be obtained by the use of certain detergents which have the property of forming a film on the surface. This film entraps the bacteria, but they are still present and alive. If the film is scratched with a sterile instrument they are released and a high count dish is the result.

If, however, a detergent (sodium metaphosphate) is used which forms soluble ionic complexes with calcium and magnesium, and hence does not form a film, the bacteria on the dishes wash away in the rinsing. Low counts are obtained, and the use of a chlorine compound as a sterilizing after-rinse seems questionable.

Digest from "Sanitary Value of Sodium Metaphosphate in Dishwashing; Relative Value of Film Prevention and Auxiliary Chemical Disinfection," by G. O. Hall and Charles Schwartz. *Industrial and Engineering Chemistry*, **30**, 23, 1939.

A YALE STORY OF SAFETY

That's what happens every time a load is lowered on a Yale Hand Lift Truck—Check and Double Check! For the Yale Release Check has a concentrated cushioning action that makes it doubly efficient—a safety factor that always protects load, truck, operator and floor.

A bronze bushing guides the high carbon ground piston rod—keeps it from buckling. In addition, there is an extra capacity oil reservoir with an automatic oil seal that prevents leakage. Once the oil is in, it stays there. And as a final indicator of the Yale Release Check's quality manufacture, there is the highly precisioned automotive type piston ring.

With this check on the job the load is never dropped—It's gradually lowered!

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Multiple Lift Hand Lift Truck. Cap.—3500 & 5000 lbs.

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BOOKS RECEIVED

TESTS FOR COLOUR-BLINDNESS BY S. ISHIHARA. Published by Kanehara & Co. of Tokyo, Japan. 24 pages, 5½ x 7½ in. with 32 colored plates. Seventh Edition, 1936. Sole agent in United States, C. H. Stoelting Co., Chicago, Ill. Price $8.27.

Though this is not a new book, it is mentioned here because of its unique character in enabling one to detect several forms of color blindness. Its text is really only eight pages long, but is repeated in French and German. The principle feature of the book is its 32 color plates, very cleverly designed so that color-blind persons will read numerals that are non-existant to those with normal vision and *vice versa*.

In view of the importance of color in establishing quality grades, the problem of quality control must not be delegated to those who are color blind. The book would be useful in testing auto and truck drivers for their color vision. Also it might serve to explain away the contempt which many wives hold for their husbands' taste in neckties.

MANAGEMENT OF DAIRY PLANTS. Revised Edition. By M. Mortensen. Published by Macmillan Co., 60 Fifth Ave., New York, N. Y., 1938. 407 pages; 6x8⅝ in.; cloth. Price, $3.

If you are an expert in all phases of dairy management, this book may be of no use to you. But if you know only certain phases of the business and want to learn the fundamentals of the other phases, then it ought to help you. Actually, the author created primarily a textbook for undergraduate students, at the same time presenting his material in such a form as to make it of value in the practical management of dairy plants. Standards of production, equipment, cost, marketing and so forth are given in the book. These will serve as checks for the practical plant manager.

All the many factors entering into dairy plant management are covered, from a preliminary survey of conditions and organization of the dairy company to the marketing and advertising of dairy products and to credits and collections. Handling of personnel, procurement of milk and cream, refrigeration, pasteurization and sewage disposal are among the 24 subjects to which chapters are devoted. Obviously, the author had to hit the high spots to cover so much territory between pages 1 and 407 and still have room for an index.

FEDERAL FOOD, DRUG AND COSMETIC ACT. By Charles Wesley Dunn. Published by G. E. Stechert & Co., 31 E. 10th St., New York, N. Y., 1938. 1,370 pages; 6x9 in.; cloth. Price $6.

Here is a legislative history of the new food law including all the important bills and what happened to them in committee, in addition to the full text of the law itself and in Congress. It's the sort of book you need if you are trying find out what happened to some part of the original bill or what was the real intent of Congress. Long quotations from the *Congressional Record* to support the foregoing. It also contains the old food law and its regulations and the Canadian Food and Drugs Act of 1927.

NEW! Starches SPECIFICALLY FOR PIE FILLINGS!

"PURITY" STARCH FL—For Fruit and Lemon Pies in which no milk is used.

"PURITY" STARCH M—For Cream, Chocolate, and other pies made with milk.

Both these starches offer unique practical properties found in no other starches. They are *tasteless*—do not "blanket" the flavor of the other ingredients. They set to a smooth, creamy body, firm, yet free from lumps and graininess. Fillings made with them have a rich sparkle—no dull cloudiness.

We invite your inquiries, and shall be glad to send you one or more trial bags on approval, from our nearest factory. Sets of tested and proven formulae for various types of pie fillings made with these starches are yours for the asking.

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PURITY

COMMERCIAL FRUIT AND VEGETABLE PRODUCTS, A TEXTBOOK FOR STUDENT, INVESTIGATOR AND MANUFACTURER. Second edition. By W. V. Cruess. Published by McGraw-Hill Book Co., 330 W. 42d Street, New York, N. Y., 1938. 798 pages; 6x9 in.; cloth. Price $6.

This greatly enlarged second edition is a decided improvement over the 1924 edition. It contains the technology as well as many formulas and working directions for all the more important products made from fruits and vegetables. Worth having in your library.

WHEELER-LEA ACT. By Charles Wesley Dunn. Published by G. E. Stechert & Co., 31 E. 10th St., New York, N. Y., 1938. 517 pages; 6x9 in.; cloth. Price $4.

Mr. Dunn has assembled here all the pertinent legislative history of the Wheeler-Lea Act, including the record of hearings, committee reports, and debate in Congress. Important point to remember is that this law is a companion law to the Federal Food, Drug and Cosmetic Act. Included also is the text of the Act.

MATHEWS CONVEYORS. Published by Mathews Conveyor Co., 212 Tenth St., Ellwood City, Pa., 1939. 384 pages; 5x6½ in.; stiff paper. Free to engineers and plant operating men.

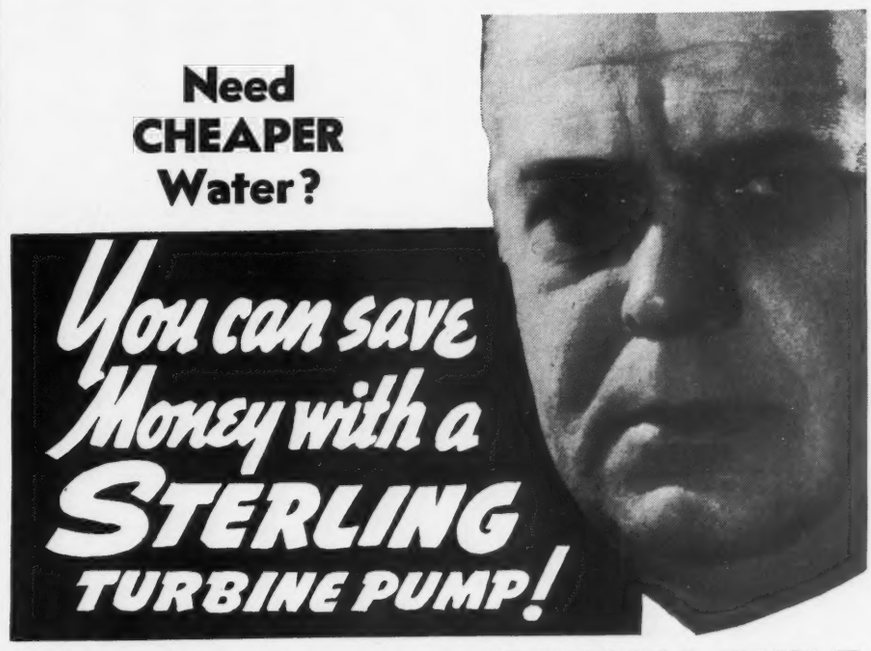
Comprised of engineering data and drawings, this is useful as a handbook to those who have to devise means of handling materials in the plant. It covers all of the usual types of conveyors and their controls and drives.

GOOD FOOD AND HOW TO COOK IT. By Phyllis Krafft Newill. Published by D. Appleton-Century Co., Inc., 35 West 32d St., New York, N. Y., 1939. 555 pages; 6x8¾ in.; cloth. Price $2.50.

Recipes so explicitly worded that they are fail-proof even in the hands of novices was the goal of the author. In addition to basic recipes, the book contains hundreds of new, but proven, ones, both native and foreign. For food manufacturers the book has two values. It contains recipes that might be converted to commercial formulas, and it demonstrates how to write directions for manipulating foods in the kitchen so as to minimize mistakes. The latter is an art in which many writers of food labels have room for improvement.

ENGINEERING DATA AND PRICES—Economy Pumps. Published by Economy Pumps, Inc., Hamilton, Ohio, 1939. 233 pages; 4¼x8½ in.; paper. Free to engineers and users of pumps; price 60 cents to others.

Although this book is published by a manufacturer of pumps, it is not a promtion piece but a work of practical value to engineers and users of pumps. It is a guide to the type of pump required for a particular purpose and tells whether a special material is needed, what horsepower is required to drive the pump, how much the unit, motor and control cost and how the equipment should be ordered. The first part of the book deals with the various classes of pumps. The second part is devoted to tabular hydraulic data, including flow in pipes, pump installations, pipe and fitting data, electrical tables, operating efficiencies and costs, data for calculation of capacities for buildings, boiler feeding, pumps for paper stock and miscellaneous data.



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PATENTS

Biscuits Embossed With Decorative Design Made on Machine Having a Plurality of Cutting Elements Secured to Cross-head on Which Embossing Elements are Mounted so That Dough Sheets May be Embossed and Cut Simultaneously and the Cut Section May be Stripped From the Cutting Elements—Alfred Alltimes, Medford, Mass. No. 2,153,067. April 4, 1939.

Sugar Crystallized in Cylindrical Tank Fitted With a Hollow Rotating Shaft Mounted Within and Extending Through Tank, Serving as a Receiving Header and Delivery Header for Series of Tubular Helical Coils Through Which Flows Cooling Liquid and Driving a Combined Helical Stirrer and Scraper Arranged Concentrically With Respect to Shaft and Extending to Give Close Clearance With Inner Surface of Tank—Harry E. Grill, Willoughby and Henry H. Feldstein, Cleveland, Ohio to Kilby Mfg. Co., Cleveland, Ohio. No. 2,153,082. April 4, 1939.

Eggs and Fruit Cleaned of Surface Dirt by Mechanical Brushing in a Continuous Manner—Ronald R. Brogden, Orlando, Fla. to Brogdex Co., Winter Haven, Fla. Nos. 2,153,294; 2,153,295; and 2,153,296. April 4, 1939.

Starch Paste Prepared by Diastatic Enzyme Action in the Presence of an Oxidizing Activator—John J. Willaman, Robert A. Diehm, and Edward W. Clark, Bristol, Pa. to Röhm & Haas Co., Philadelphia, Pa. No. 2,153,445. April 4, 1939.

Fruits and Vegetables Made Resistant to Deterioration by Coating With a Uniform Film Consisting of a Waxy Constituent and Reaction Product of De-waxed Shellac and an Alkali—Jagan N. Sharma, West Los Angeles, Calif. to Food Machinery Corp., San Jose, Calif. No. 2,153,487. April 4, 1939.

Milk Products Sterilized and Brought to Desired Viscosity by Heat Treatment During Canning Operations—Charles O. Ball, Oak Park, Ill., to American Can Co., New York, N. Y. No. 2,153,542. April 11, 1939.

Fruits and Vegetables Graded by Mechanical Means—John R. Fitzgerald, Harlingen, Tex. No. 2,153,688. April 11, 1939.

Foods Quick-Frozen by Refrigerating Spray While Moving Through Separate Freezing Zones in Bank Formation on Spaced Perforated Conveyors—Chester J. Conn, Smithtown Branch, N. Y. No. 2,153,742. April 11, 1939.

Vinegar Made to 120-Grain Strength Having Substantially the Same Flavor, Aroma, Malic Acid, and Cider Vinegar Organism Content Commonly Found in 40 to 60-Grain Cider Vinegar—Victor E. Speas, to Speas Co., Kansas City, Mo. No. 2,153,849. April 11, 1939.

Fowl Plucked Mechanically by a Motor Driven Rotary Device—Oscar H. Crapo, Dartmouth, Mass. No. 2,154,420. April 18, 1939.

Bread Protected Against Mold Growth by Use of Small Quantities of Propionic Acid and Its Ammonium Alkali and Alkaline Earth Metal Salts—Charles Hoffman, Scarsdale, Gaston Dalby, New York, and Thomas R. Schweitzer, South Ozone Park, N. Y., to Ward Baking Co., New York, N. Y. No. 2,154,449. April 18, 1939.

Chewing Gum Base Made to Contain a Homogeneously Distributed Quantity of Prolamine—Harry M. Weber, West Englewood, N. J., to Prolamine Products Inc., Dover, Del. No. 2,154,482. April 18, 1939.

Paper Container for Milk Made With a Flexible Tubular Spout Normally Pressed Flat Against Outer Wall of Container—Mariano Rossi, Cleveland, Ohio. No. 2,154,584. April 18, 1939.

Canned Foods Retorted and Cooled in Machine Containing Both Compartment in Free Communication With Each Other at the Top—Herbert Dan Galvin, London, England, to L. C. Engineering Supplies Ltd., New Malden, Surrey, England. No. 2,154,978. April 18, 1939.

Zinc, Iron, and Tin Surfaces Cleaned by Corrosion-Inhibiting Alkaline Detergent Effective Through Temperatures Ranging From Cold to Boiling—Carroll L. Griffith and Lloyd A. Hall to Griffith Laboratories, Inc., Chicago, Ill. Nos. 2,155,045 and 2,155,046. April 18, 1939.

Kola Nut and Coffee Products Added to Chocolate Mass for Manufacture of Kola Chocolate—Albert Rinne, Berlin-Charlottenburg, Germany. No. 2,155,148. April 18, 1939.

Cream Whipped During Release of Compressed Gas Content Comprising 15 to 25 Per Cent of Carbon Dioxide and Not More Than 40 Per Cent of Nitrous Oxide Nitrogen—Isaac M. Diller, Brooklyn, N. Y. No. 2,155,260. April 18, 1939.

Atlantic Crabs Freed From Copper-Containing Portions Preparatory For Canning—Sterling G. Harris, to The Blue Channel Corp., Centerville, Md. No. 2,155,308. April 18, 1939.

Pectin Made Readily Dispersable in Water, Fruit Juices, and the Like Through Reaction With a Soluble Nickel Salt—Philip Bliss Myers, Scarsdale, N. Y., to Sardik Inc., Jersey City, N. J. No. 2,155,361. April 18, 1939.

Protein Composition Made by Drying a Homogeneous Liquid Mixture Containing Hemoglobin of Animal Blood and Casein of Animal Milk—Carroll L. Griffith, to The Griffith Laboratories, Inc., Chicago, Ill. No. 2,155,417. April 25, 1939.

Gelatinous Fruit Pulp Spread in Thin Layer Upon Heated Surface to Permit Escape of Moisture From Top Surface While Being Heated and Dried From the Bottom—Chauncey R. Stuntz, Seattle, Wash. No. 2,155,453. April 25, 1939.

Open-Top Dough Mixer Made With Canopy Cover Raised by Cam Action to Permit Tilting of Mixer Bowl—Robert M. Temple, Philadelphia, Pa. No. 2,155,454. April 25, 1939.

Pork Bellies Skinned by Mechanical Means—Nick John Miller, St. Paul, Minn., to Industrial Patents Corp., Chicago, Ill. No. 2,155,730. April 25, 1939.

Gelatin Shaped and Dried Into Hollow Sphere Forms—Roy C. Newton and Frank L. de Beukelaer, to Industrial Patents Corp., Chicago, Ill. No. 2,155,733. April 25, 1939.

Cheese Given Protective Coating of Double Set of Alternating Layers of Cotton Gauze Fabric and Paraffin—Clinton H. Parsons, to Industrial Patents Corp., Chicago, Ill. No. 2,155,736. April 25, 1939.

Peas Hulled Mechanically — Tarohachi Komaki, Claremont, Calif. No. 2,155,793. April 25, 1939.

Milk Freed From Suspended Impurities by Use of Diatomaceous Earth Filter-Aid—Richard W. Schmidt, Redondo Beach, Calif., to The Evanston Co., Los Angeles, Calif. No. 2,155,843. April 25, 1939.

Cereals Shredded and Deposited in Continuous Multiple Layers Upon a Conveyor Traveling at a Speed Coordinated With That of Shredding Devices—Elmer W. Noxon, Webster Groves, and Kenneth E. Garrison, St. Louis, Mo., to Ralston Purina Co., St. Louis, Mo. No. 2,155,952. April 25, 1939.

Confections in Block Shapes Impaled Upon Stick Handles by Mechanical Means—John F. Robb, Cleveland Heights, Ohio. No. 2,155,995. April 25, 1939.

Oleomargarine Made Through Use of Edible Water Soluble Alginate—Vernon K. Wilt, to Kelco Co., Los Angeles, Calif. No. 2,156,036. April 25, 1939.

Vapors From Roasting Coffee Condensed, Freed From Entrained Substances and Incorporated in Coffee Products—Gerald L. Wendt, New York, to Douglas Fronmuller, Middle Village, Long Island, N. Y., to Coffee Products Corp., New York, N. Y. No. 2,156,212. April 25, 1939.

Pectin Synthesized by Heat Treatment of Lactone of Uronic Acid to Form Octa-Uronic Acid—Philip Bliss Myers, Scarsdale, N. Y., to Sardik Inc., Jersey City, N. J. No. 2,156,223. April 25, 1939.

Nuts Blanched by Treatment With Hydrolyzing and Oxidizing Solutions to Loosen and Dissolve the Lignin and Fibrous Cellulosic Skin Material—Arthur F. Stagmeier, Montclair, N. J., to General Foods Corp., New York, N. Y. No. 2,156,406. May 2, 1939.

Vinegar Generator Fitted With an Electrically Actuated Automatic Control to Regulate Volume of Mix Flowing Into Generator—Lewis S. Elmer, Baltimore, Md. No. 2,156,428. May 2, 1939.

Brewers Powdered Yeast Mix Made for Use in Ice Cream Mixtures—Lloyd M. Holcomb, Perry, Iowa. No. 2,156,499. May 2, 1939.

Coffee and Similar Products Packaged in Bags Filled With Gas Other Than Air—Almon J. Cordrey and Melvin Wagner, to Liquid Carbonic Corp., Chicago, Ill. No. 2,156,561. May 2, 1939.

Chewing Gum Rolled Into Ribbon Form Without Use of Sugar or Other Powdered Material to Prevent Sticking—Frank A. Garbutt, Los Angeles, Calif. No. 2,156,810. May 2, 1939.

Root Vegetables Carrying Vegetative Tops Washed by Mechanical Means Without Crushing or Tearing Tops—Ford C. Davis, Hartville, Ohio. No. 2,156,840. May 2, 1939.

Zein Recovered From Corn in Dry Solid State—Lloyd C. Swallen, Pekin, Ill., to Corn Products Refining Co., New York, N. Y. No. 2,165,928. May 2, 1939.

Oils Separated and Recovered From Fish Livers Without Saponification — Herbert Hempel, Essex, Mass., to Gorton-Pew Fisheries Co. Ltd., Gloucester, Mass. No. 2,156,985. May 2, 1939.

Aluminum Wrappers Protected From Aluminum-Attacking Foods by Covering With a Polymerized Vinyl Ester Coating—Thomas Morley Hill, New Kensington, Pa., to Aluminum Co. of American, Pittsburgh, Pa. No. 2,156,987. May 2, 1939.

Pectates Made From Crude Fruit Pulp—Clarence Walter Wilson, Norco, Calif., to California Fruit Growers Exchange, Los Angeles, Calif. Reissue No. 21,077. May 9, 1939.

Fermentable Sugars and Starches and Caseic Proteins Protected Against Micro-organism Growth by Mixture of Polychlorophenol and a Metallic Borate Activating Agent—Thomas S. Carswell, Glendale, Mo., to Monsanto Chemical Co., St. Louis, Mo. No. 2,157,113. May 9, 1939.

Sugar Confectionery Material Mechanically Rolled Into a Sheet Form—Hermann Thürlings, Viersen, Germany. No. 2,157,192. May 9, 1939.

Fig-Fruit Mixture for Bakery Use Made by Milling Figs to Pulverize Seeds and Stems and Mixing With Fruits Having Flavor Masking Fig Flavor—John Hood Forkner, Fresno, Calif., to J. C. Forkner Inc. No. 2,157,485. May 9, 1939.

Animal Casings Freed From Macus, Fat and the Like by a Continuous Method—Henry J. Wollweber, to Oppenheimer Casing Co., Chicago, Ill. No. 2,157,515. May 9, 1939.

Fruits and Vegetables Diced While Being Forced Through Plurality of Rows of Fixed Cutting Blades—Herbert E. Gray, San Jose, Calif. No. 2,157,604. May 9, 1939.

Beer Improved in Flavor and Hastened in Aging by Use of Small Quantity of Non-Toxic Monochloracetic Acid—Abraham Schapiro, Chicago, Ill. Nos. 2,157,632 and 2,157,633. May 9, 1939.

Pressure Filter For Milk Having Top Inlet and Bottom Outlet Made to Consist of a Series of Filter Disks With Filter Materials Superimposed Upon Rigid Perforated Plates—James M. Kidd, Birmingham, Ala. No. 2,157,668. May 9, 1939.

Vegetable and Animal Oils Clarified and Made Substantially Free of Acids by Treatment With an Alkylolamine and a Dilute Solution of Caustic Alkali—Daniel Irving Ashworth, Wappingers Falls, N. Y., to De Laval Separator Co., New York, N. Y. No. 2,157,882. May 9, 1939.

Coffee Decaffeinated by Solvent Extraction—Walter C. Hasselhorn and Joseph John Thompson, to Kellogg Co., Battle Creek, Mich. No. 2,157,956. May 9, 1939.